Journal of the Society of Arts.

FRIDAY, APRIL 19, 1861.

INTERNATIONAL EXHIBITION OF 1862.—GUARANTEE DEED.

The Council beg to announce that the Guarantee Deed is now lying at the Society's House for signature, and they will be much obliged if those gentlemen who have given in their names as Guarantors, as well as others who take an interest in the Exhibition, will make it convenient to call there and attach their signatures to the Document. Signatures for sums amounting in the aggregate to £374,700, have already been attached to the Deed.

GUARANTEE FUND FOR THE EXHIBITION OF 1862.

The following additions have been made since the last announcement, in the *Journal* for April 12:—

*** *The names marked with an asterisk are those of Members of the Society of Arts.*

NAME.	AMOUNT.	REPRESENTING THE OBJECTS OF THE SOCIETY—ARTS, MANUFACTURES, AND COMMERCE.
John Burgess, Mayor of Warrington	100	Arts.
Richard Hacking, Bury, Lancashire	1,000	Commerce.
Cooke, Hindley, and Law, 12, Friday-street, E.C.	1,000	Commerce.
Charles L. Collard, 16, Grosvenor-street, W.	1,000	Manufactures.
*John B. Sedgwick, 1, St. Andrew's-place, Regent's-park, N.W.	100	Arts.
*Henry Deacon, Appleton, near Warrington	100	Manufactures.
John Goodair, Mayor of Preston...	250	Arts.
T. O. Stock, 18, Austin-friars, E.C.	300	Commerce.
A. W. Bingley, Arlington-street, S.W.	100	Arts.
Webster and Horsfall, Birmingham	500	Manufactures.
Fredk. D. Phillips, 40, High Holborn, W.C...	100	Commerce.
The Mayor of Bolton	500	Commerce.
William and John Line, Daventry	100	Manufactures.
Robert Burgess, 14, 15, and 16, Opera-arcade, S.W.	100	Commerce.
W. P. Salter, Mayor of Thetford	100	Arts.
Daniel Biddle, 81, Oxford-street, W.	500	Commerce.

BY ORDER,

P. LE NEVE FOSTER, *Secretary.*

INTERNATIONAL EXHIBITION OF 1862.

FINE ARTS.

The Committee for advising the Commissioners in matters connected with the Fine Arts, met at the rooms of the Society of Arts, on Friday, the 12th inst.

There were present:—Earl Stanhope in the chair:—Earl Somers, Lord Llanover, Lord Taunton, Lord Elcho, M.P., the Lord Chief Baron, Mr. Edwin W. Field, Mr. Thomas Ashton, Mr. Tom Taylor, Sir Charles L. Eastlake, President of the Royal Academy, Mr. Frederick Tayler, President of the Old Society of Painters in Water Colours, Mr. Henry Warren, President of the New Society of Painters in Water Colours, and Mr. Le Neve Foster, Secretary,

ORGANIZATION OF COMMITTEES OF CLASSES.

A meeting of the Committee appointed to advise her Majesty's Commissioners for the Exhibition of 1862, as to the organisation and selection of committees for the various classes into which the Exhibition will be divided, was held on Wednesday, the 17th inst., at the rooms of the Society of Arts. There were present the Right Hon. the Lord Mayor, M.P. (chairman), the Marquis of Hartington, M.P., Lord Stanley of Alderley, Lord Stanley, M.P., the Right Hon. W. Hutt, M.P., Mr. H. Cole, C.B., Mr. Bazley, M.P., Mr. T. F. Gibson, the Mayor of Birmingham, the Presidents of the Chambers of Commerce of Bradford, Bristol, Hull, Manchester, and the Potteries, and Mr. Edgar Bowring, Honorary Secretary to the Committee.

ARRANGEMENT OF MINERALS AND MINERAL MANUFACTURES IN THE EXHIBITION OF 1862.

The following communications have been addressed to the Secretary of the Society of Arts:—

SIR,—I beg to enclose a copy of a memorial which was yesterday forwarded to Her Majesty's Commissioners for the Great Exhibition of 1862, and shall feel much obliged if you will insert it in the *Journal*.

A personal application has been made by me to nearly

all the intended exhibitors whose names are appended to the memorial and also to many others who do not intend to exhibit, and therefore, whose names do not appear; and I can confidently state, that the feeling, of this large mineral district is decidedly in favour of the arrangement advocated in the memorial, and that the manufacturers have not the slightest objection to having their contributions separated for the purpose of classification.

I may mention, that the signatures are mostly those of the principal firms, and that some of them give employment to a population of many thousands each.

I am, &c., ALEX. WILLIAMS,
L.R.C.P., Edin., M.R.C.S.L., &c.

Neath, April 16th, 1861.

To Her Majesty's Commissioners for the Great Exhibition of 1862.

We, the undersigned owners of mineral property, producers of minerals, mineral manufacturers, and others, either exhibitors in the Great Exhibition of 1851, or intended exhibitors in the proposed Exhibition of 1862, beg to direct your early attention to the desirableness of preparing and publishing, as soon as possible, some digested plan, according to which the minerals and mineral manufactures in the coming Exhibition shall be arranged. We further beg respectfully to suggest that such plan should admit of the various minerals and mineral manufactures being so placed and arranged as to admit of a ready comparison of similar productions, and also of raw materials being exhibited as far as possible in direct relation with the various manufactures they are used for.

We submit that by the early publication of some plan or method of arrangement to be adopted in the building, we shall, as exhibitors, be placed in the best position for carrying out the object of the Exhibition, to exhibit progress in manufacture, and at the same time shall be best enabled to prepare and adapt the various objects we desire to exhibit.

Vivian and Sons.
M. Moggridge.
Geo. Grant Francis, a Local Commissioner in 1851 Exhibition.
The Governor and Company of Copper Miners in England, *per* Wm. Price Struve.
John Biddulph.
Townsend, Wood, and Co.
Joshua Williams and Co., Aberdylais Tin Works.
Arthur Bankart, Red Jacket Copper Works.
Griffith Lewis, Yrismedw Brick Co.
C. W. Neville, Lanelly Copper Works.
Morgan, Perkins, and Co., Colliery Owners, Llanelly.
John S. Tregonning and Co., Tin Plate Works, Llanelly.
T. Williams, Manager, Lead Works, Llanelly.
Neath Abbey Coal Co. and Self, *per* H. H. Price.
Penrose and Starbuck, Colliery Proprietors.
Smith, Morris, and Co., Vernon Tin Plate Works, Neath.
Dillwyn and Co.
Sweetland, Tuttle and Co., Briton Ferry Copper Works.
Redbrook Tin Plate Company.
R. Kyrke Penson.
The Rhos Colliery Company, and the Ynisneath Colliery Company, *per* Geo. Bush.
The Briton Ferry Iron Company, *per* R. Phillips.
The Melincrythan Co., Chemical Works, Neath.
Richard Morgan and Sons, Anthracite Coal Owners, Llanelly, Carmarthenshire.
Wm. Roper, Penclawdd and Corrway Collieries, Llanelly.
Neath Abbey Iron Co., Neath Abbey, Neath.
J. W. Young, Mineral Paint Manufacturer, Neath.
The Gadly's Iron Co., Aberdare.
David Davies, Blaengwaer Collieries.
Samuel Thomas, Squborwen Colliery.
Ebenezer Lewis, Bwllfa Colliery.
Crawshay Bailey.
The Aberdare Iron Co., Aberdare.
The Aberdare Coal Co., Aberdare.

Sir,—As the subject of arrangement at the forthcoming Exhibition is evidently attracting attention, I venture to make a few remarks on what I cannot but regard a most unfortunate impression produced by my paper and the discussion of the 15th March. In the memoir I spoke of the advantage of adopting some general plan of arrangement for the Exhibition, and suggested a special method for arranging minerals and mineral manufactures. At the close of the paper, in two or three sentences, I intimated that if a plan were adopted, there must be some one in each department to carry it out; and that the placing and arranging supposes the employment of some active competent person to superintend. It so happened that these remarks, which were not intended to mean at all more than they expressed, were construed by Mr. Cole and other speakers in the discussion, to form the essential feature of the plan; and I find myself since quoted as advising "a most unpopular scientific despotism," when I was only thinking of suggesting a mode by which the various objects might be most usefully exhibited.

As the scientific despotism is by no means likely to be adopted in our free country, and as it never entered into my mind that exhibitors were not to be allowed to place in their own way their own objects, subject to some general plan of arrangement, I venture to hope that this bugbear may not be brought forward again, but that, in discussing the question, regard may be had to the points really at issue.

The recommendations I offered were, in a few words, as follows:—*First*, That mineral manufactures should be exhibited in all cases, or as far as possible, in connection with the raw material from which they are produced, the object of this being to avoid the ill-effect of the raw materials being accumulated in one spot in too large a mass to be interesting to the public or instructive to those concerned. *Secondly*, That minerals and the mineral manufactures should be grouped on a somewhat different principle from that adopted in the last Exhibition, and on a plan more directly referring to their economic uses. *Thirdly*, That, if possible, the various foreign collections should either be worked into the general series, or at least so placed as to be readily comparable with the British series; and, *Fourthly*, That a digested plan of arrangement should be prepared, and submitted to exhibitors.

I have dwelt much more on the two first than on the third of these recommendations, and, indeed, I fully appreciate the difficulties attending a separation of collections. This point being now given up as inconsistent with the outline already published by the Commissioners, the other recommendations may perhaps meet with attention, as they have been favourably noticed by some speakers and writers on the subject, and I cannot but regret that they have been passed by without consideration by the greater number of my critics.

Not having been present at the Munich Exhibition, I cannot speak to the arrangement there adopted, but I think I may venture to say, from my own experience, that if a good, well-digested plan were really submitted, most of the exhibitors, and some at least of the Foreign Commissioners, might be induced to adopt it, and thus redeem from hopeless neglect a department that might be, and ought to be, extremely interesting.

Although the classes, as adopted in 1851, have been retained by the Commissioners with very slight alterations of detail, and none of general principle, there does not appear to me to be anything inconsistent with such plan, which will, I presume, be considered by the Committees of Classes, whose appointment is not yet announced. I state this to show that I have no intention of combating with a fore-gone conclusion, or hampering the Commissioners by raising discussion on matters already settled.

I am, &c., D. T. ANSTED.

Athenæum Club, April 15th, 1861.

CONVERSAZIONI.

The Council have arranged for two Conversazioni during the present Session; the first on Saturday, the 4th of May, at the Society's House, the card for which will admit the Member only; the second on Saturday, the 1st June, at the South Kensington Museum, the card for which will admit the Member and two ladies, or one gentleman.

Cards for both these Conversazioni have been issued this day. Any member not having received them should communicate with the Secretary.

Secretaries of Institutions in Union, who may receive applications from any of their members desirous to attend either of these Conversazioni, can have a limited number of cards placed at their disposal on application to the Secretary of the Society of Arts.

ARTISTIC COPYRIGHT.

In the House of Commons, on Monday last, the 15th inst., the Attorney-General, in moving in a committee of the whole house for leave to bring in a bill to amend the law relative to copyright in works of fine art, said:—The House will feel that at this late hour of the night it will be quite useless to anticipate the discussion which must take place on the second reading of this bill. All that will be necessary now, will be simply to obtain leave for its introduction. I shall therefore confine myself to the proposition, that some legislation of the kind is absolutely necessary. That necessity has, I believe, been for a long time admitted by this House, and by the other House of Parliament. I shall therefore ask now, simply for permission to introduce the bill, promising to make in the second reading a complete statement, both of the reasons of the bill, and of its main principles and provisions. Perhaps, however, the House will think it necessary that even now I should state a few facts, showing the necessity that exists at present for some legislative enactment for the protection of copyright in works of fine art. We are about to invite, within a few months, the artists of all nations to send their works of art to our approaching Exhibition, but although many nations have made great exertions to secure an international copyright, we have not as yet, in this country, any law which would give protection to their works, which above all others are entitled to it. This is one reason why I am most anxious to introduce this bill, without loss of time, promising fully to explain its provisions on the second reading. I feel that on the present occasion, and at this late hour, I shall best consult the wishes of the House by simply asking leave to introduce the bill.

The bill was then ordered to be brought in by the Attorney-General, Mr. Massey, Sir George C. Lewis, and the Solicitor-General, and read a first time. The second reading was fixed for the 25th inst.

THIRTEENTH ANNUAL EXHIBITION OF INVENTIONS.

The Exhibition was opened on Monday, the 1st of April, will remain open every day until further notice from 10 a.m. to 4 p.m., and is free to members and their friends. Members by ticket, or by written order, having their signature, may admit any number of persons. Members of Institutions in Union with the Society are admitted on showing their cards of membership.

A sheet of tickets has been issued to every member. Additional tickets may be had on application to the Secretary of the Society.

EIGHTEENTH ORDINARY MEETING.

WEDNESDAY, APRIL 17, 1861.

The Eighteenth Ordinary Meeting of the One Hundred and Seventh Session was held on Wednesday, the 17th inst., Sir James Kay Shuttleworth, Bart., in the chair.

The following gentlemen were proposed for election as members of the Society:—

Buncombe, Charles Hope	4, York-place, Mile-end, E.
Chanter, Thos. Burnard	Bideford.
Dalziel, George	9, St. George's terrace, Regent's-park, N.W.
Denham, Wm. Graham	48, Kent-street, Southwark, S.E.
Girdwood, William	Old Park, Belfast.
Ramsden, James	Abbot's Wood, Ulverstone.
Rouch, Wm. White	180, Strand, W.C.
Schneider, H. W.	17, Gracechurch-street, E.C.
Smith, Augustus	Wentworth-street, N.E.
Whetham, Charles	52, Gordon-square, W.C.; and Bridport, Dorset.

The following candidates were balloted for and duly elected members of the Society:—

Brett, John W.	2, Hanover-square, W.
Bruton, Leonard	Chamber of Commerce, Bristol.
Callow, James William	8, Park-lane, W.
Courtenay, L. Walter	Oak-house, Forest-hill, S.E.
Debenham, W., junr.	42, Wigmore-street, W.
Dennys, Haddock	3, Percy-terrace, Islington, N.
Dugdale, John	Burnley.
Fleming, John	21, Austin Friars, E.C.
Maull, Henry	Lewisham, S.E.; and 119, Piccadilly, W.
Potter, Wm. Simpson	1, Adam-street, Adelphi, W.C.
Robertson, Alexander	Highfield, Sheffield.
Room, Benjamin	36, Parliament-street, S.W.
Shaffner, Col. T. P.	42, Half Moon-street, Piccadilly, W.
Stevenson, James	Jedburgh, N.B.
Vulliamy, Lewis Llewelyn	Clapham-common, S.W.
Young, Thomas	14, Eaton-square, S.W.

The following Institution has been taken into Union since the last announcement:—

Maitland (New South Wales) School of Arts.

The Paper read was—

ON THE COTTON SUPPLY.

BY JOHN CRAWFURD, F.R.S., LATE GOVERNOR OF SINGAPORE.

For some years back much apprehension has been entertained for the permanency of our supply of cotton, the raw material of by far the greatest of our manufactures,—of the greatest manufacture, indeed, which the world has ever known. I do not myself participate in this apprehension, being satisfied that in this, as in every other staple commodity which we receive from foreign countries,

an effectual supply will assuredly follow an effectual demand.

The herbaceous cotton plant, of numberless varieties, is an indigenous product of Hindustan and America, and has been cultivated in both far beyond the reach of history. The Greek conquerors of India, and the Spanish conquerors of Mexico and Peru, found the people of those countries clothed with it. From those countries it has spread far and wide, as far as Chili to the south of the equator, and as far, at least, as Egypt to the north of it. It thrives from the equator to 35 degrees away from it, and of all great staple articles of cultivation, maize and tobacco excepted, it has the widest geographical range. As to soil, cotton is found to flourish in many different varieties. The finest cotton of America is grown in the sandy soil bordering the sea, and the most abundant crops are produced in the rich alluvion of the plains of the Mississippi and its affluents. In India, its favourite soil is a black mould, the product of decomposed basalt. In Egypt it is grown in the mud of the Nile, and in Java in the deep rich soil of decomposed volcanic rocks.

In so far, then, as soil and climate are concerned, there is a very wide range for the production of cotton, but the question for our present consideration is the conditions under which good cotton can be most cheaply, abundantly, and steadfastly produced to meet our own great and increasing demand for it. The following may, I think, be stated, as the most indispensable conditions; a propitious climate, a suitable soil, land free from heavy imposts whether in the shape of rent or tax, a sufficient supply of labour, a skilful and enterprising husbandry, cheap and easy means of transport, with a government that amply secures life, property, and liberty.

I shall endeavour to show to what extent these conditions exist in the different countries which now supply ourselves and other manufacturing nations with cotton. An experience of nearly seventy years proves that they exist in the largest proportion in the Southern States of the American Union, and I therefore begin with them. Their present year's crop has been estimated at four millions of bales, each bale of 443 pounds weight, the value of this immense produce, the creation of a single life of man, being computed at £40,000,000. They supplied ourselves in 1859 with 8,558,673 cwts., that is close on 430,000 tons, of the value of £28,269,579. Last year the quantity had increased to close on 10,000,000 cwts. They furnished us, in fact, with 78 parts in 100 of the quantity and 81 in 100 of the value of our whole supply. This palpable fact is conclusive of the superior capacity of the countries in question, since it leaves to all other countries but 22 parts in 100 of the quantity, and no more than 19 in 100 of the value of our supply.

The auspices under which the cultivation of cotton is carried on in the Southern States of America are sufficient to account for this wonderful production. Climate, soil, natural facilities of transport, but above all a skilful husbandry and an enterprising commerce are there all auspicious. The producing countries extend from South Carolina, in the 36th degree of latitude, to Louisiana, in the 30th, within which bounds every variety of good cotton is produced, from the finest Sea-Island, worth 24d. a pound, to useful New Orleans of one-fourth that value.

The extent of land capable of growing cotton in the States in question has been computed at better than 39 millions of acres, or above 60,000 square miles, some 10,000 more than the area of England and Wales. Of this immense surface, the amount under cultivation in 1859 was computed to be only a sixth part, yet it yielded some 15,800,000 hundred weights of clean cotton. If there be any approach to correctness in this computation, that quantity can be augmented five-fold, and this without any increase of cost, since the unoccupied field is all virgin land.

But even after every acre of the wild land thus computed to be fit for the growth of cotton has been occupied with it, an improved system of agriculture will long allow of the cultivation of the plant without any material increase of cost.

According to this view several ages must elapse before all the lands of America capable of growing cotton are occupied with this plant. In this case, the cotton manufacture of England, drawing its supplies from the Southern States of America in the same proportion as it does at present, might go on increasing to five times its existing magnitude. No doubt, a time will arrive, although it must be a very remote one, when (a dense population and its inevitable concomitant, high rent, raising the cost of production) America will prove the best market for its own cotton, and exportation necessarily cease. But for practical purposes we need not speculate on a contingency so very remote.

In the meanwhile, American cotton, instead of having risen in price, has been constantly falling from its first cultivation for export. In 1793, shortly after the first considerable imports of American cotton into England, the price of Upland Georgia was about 21d. a pound, and I believe it may now be quoted at about 6d., or less than a third part of that price. Previous to the invention of the improved cotton-gin, and while the culture was confined to South Carolina and Georgia, where the plant was liable to be cut off by early and late frosts, the cost of production was necessarily high. By the improved gin, and the pushing of the cultivation into the milder climate and more fertile soil of the Gulf States, the price necessarily fell. That that extension had been a main cause of the great fall which has taken place in the bulk of American cottons, is, I think, to be inferred from the fact that no corresponding fall has taken place in Sea-island cotton, the finest sorts of which are still confined to the sea-boards of South Carolina and Georgia. Of this long-stapled, fine cotton, I may here observe that its high cost is not a matter of serious moment, seeing that its consumption is of a very limited description. Its entire produce in the United States, including an inferior article grown on the sea-board of Florida, is reckoned not to exceed 30,000 bales, which is no more than $\frac{1}{133}$rd part of the whole cotton crop of America; while of our own supply—and we are its chief consumers—it forms, even in value, not more than $\frac{1}{35}$th part of our whole supply.

The cultivation of cotton in Anglo-Saxon America is conducted with great care and skill throughout every stage, from the selection of the seed to the reaping of the crop, the freeing from the seed, the packing, and the transport to market. I shall, however, advert more in detail to this subject when I have occasion to compare the Indian with the American cultivation.

In some quarters, apprehensions have been entertained of a failure of the American cotton supply from such murrains as have of late years attacked the potato, the vine, and the silkworm. All these, however, it should be recollected, are exotics in Europe, the potato being a native of South America, the vine of Asia Minor, and the silkworm of China, whereas cotton is an indigenous plant of North America, less liable, therefore it may be supposed, to fail, being in its native climate. Cotton is unquestionably an indigenous plant of India, where it has been immemorially cultivated, without, as far as we know, having ever been attacked by any such epidemic as has attacked the exotic vine and potato.

By some parties fears have been entertained of a failure of American cotton from slave insurrection, but I think there are sufficient grounds for thinking that this is a very unlikely event. The masters are, in this case, of a superior race to the slaves; they are more numerous, in the proportion of two to one; they are armed, while the slaves are unarmed; they are in possession of power, and they are organised. The successful insurrection of the slaves of Haiti is not a precedent in point, for there the slaves were far more numerous than the masters, who in the contest were divided among themselves, whilst the struggle was carried on in a climate and locality favourable to the slaves, and fatal to the masters.

The high cost of slave labour has been urged as a probable obstacle to the progress of cotton culture, but to judge by the result, there seems no ground for this apprehension. The fact seems to be that the abundance of fertile land has more than counter-balanced the high price of labour performed by slaves, exactly as it has done in the Northern States the costly labour of freemen. Even India affords an illustration of the operation of the same principle. It is not Bengal, with its low-priced labour, that exports corn, but Arracan and Pegu, where wages are double or treble as high, but where abundance of unrented land of the highest fertility more than counterbalances them.

At the present moment a great revolution threatens to separate the Southern or cotton producing States from those of the North. That may be productive of temporary inconvenience, but I do not see how it can permanently jeopardise the production of cotton. The South lives and thrives by cotton just as much as does the north by corn, and the culture of one crop is just as indispensable as that of the other. So long, then, as we can afford to pay for cotton, we may rest certain that the Southern States of America, under whatever form of Government—and it is difficult to imagine that an Anglo-Saxon people, long disciplined to liberty, should establish a bad one—they will assuredly continue to supply us.

It is not, I think, too much to assert that the greatness of our cotton manufacture has in a large measure sprung out of the incident of our having planted colonies in North America. In the creation of that mighty manufacture we and our colonies have been, in fact, co-operating —playing, as it were, into each others hands. But for our inventions, our enterprise, and our industry, the cotton of America would never have reached the value of £40,000,000 a-year, nor, without the planted colonies, that of our manufactures reached £60,000,000. Had we depended on our West Indian possessions for our supply of the raw material—as we chiefly did in the last half of the 18th century—our manufacture would have been comparatively small, and had we trusted to the East Indies it would have been both small in amount and indifferent in quality. In the co-operation in question there is assuredly nothing to be regretted. On the contrary, it is a powerful bond for lasting peace and friendship.

After America, India furnishes us with the largest supply of raw cotton. Out of our whole supply it yields 15 parts in a 100 as to quantity, but only 11 as to value. As compared to our supply of American cotton, the proportions are about one-fith part as to quality, and one-seventh as to value. The first considerable importations of Indian cotton into England took place in 1788, about four years prior to the earliest import worth naming from America. For a quarter of a century after this the Indian trade was a close monopoly, and in this evil condition, of course, no considerable importation could reasonably have been looked for. Since 1813, however, the trade has been free, and the quantity imported has been greatly increased. The quality, however, has undergone no sensible improvement, for, from first to last, the cotton of India has stood the lowest of all that enters into our consumption. It is short and coarse in the fibre, and usually contains 25 per cent. of waste, whereas the cotton of America contains but half that quantity. The qualities of American cotton range from 6d. a pound to four times that price, or 300 per cent. American cotton is, therefore, suited to the manufacture of every kind of fabric, from the coarsest to the finest, while Indian cotton is fit only for the manufacture of inferior fabrics.

The causes of the inferiority of Indian cotton are manifold and manifest, but may generally be described as having their origin in a rude and barbarous industry. The soil and climate of India, it may at once be conceded, are in no respect inferior to those of America. The system of production in the two countries is, however, widely different, and quite sufficient to account for the inferiority of Indian cotton, both as to quantity and value. As far as my knowledge extends I will endeavour to compare, or more correctly, to contrast, the two systems.

The cultivator of American cotton is an educated, intelligent, and enterprising capitalist; he is the owner in fee simple of the land he tills, pays rent to no one, and pays no tax to the imposition of which he has not himself been a party. The Indian cultivator is an untaught peasant, the mere occupant of the land he tills, so long as he continues to pay the rent and taxes exacted of him. He is a farmer borrowing money from an usurer at 50 per cent. and mortgaging his future crop to pay the interest in kind. The farming stock of the American planter consists of powerful well-bred horses or mules, and the implements of his trade are as highly improved as those of the Lothian or Northumbrian farmer. The stock of the Indian cultivator consists, of a pair or two of ill-fed oxen, of a hoe worth a shilling, of a harrow worth two shillings, and of a plough worth perhaps as much as four. The agricultural processes of the American farmers are the improved discoveries of the last 70 years, and those of the Indian cultivators those pursued by their forefathers, without change from generation to generation—beyond the reach of history.

The culture of cotton is the most careful and skilful branch of American husbandry, unless we except that of tobacco. In India it is always one of subordinate consideration. In America the land is carefully tilled in raised beds, and the seed sown in drills, the plants being thinned out so as to leave a space of some 18 inches longitudinally between each plant, with a space of four feet between each drill for the convenience of hoeing, thinning, pruning, and weeding—all of them operations fastidiously attended to. In India, the seed is sown broadcast, and frequently along with another crop, which to the cotton proves, of course, a vigorous weed. In America, the same seed is not persevered in for above five or six consecutive years, but fresh seed is brought from remote places, even from as far as Mexico and Peru. In India, the same seed, unchanged, has been sown on the same lands time out of mind. In America, the well-nourished cotton plant rises to the height of from 6 to 8 feet, but in India to no more than one half that height. In America, the average produce of an acre of cotton freed from the seed, varies with the climate and the variety of plant cultivated. As far as I have been able to ascertain, it is in the most northern of the Southern States about 168 pounds, and in the Gulf States about 285 to the acre. With the Sea-Island cotton it is very fluctuating, being as low as 80 pounds and as high as 220, but on an average about 140 pounds. According to Dr. Royle, the average yield of an acre in India is but 100 pounds.

The export of cotton from America had hardly commenced, when an ingenious and effective gin, since greatly improved, was invented for performing with speed and economy the difficult operation of freeing the wool from the seed, especially with short-stapled cotton, the chief crop. This valuable invention has produced a revolution in the history of American cotton culture, and to it must be ascribed much of the prosperity of the cotton cultivation, and consequently to that of our own mnnufacture, in the increase of which Whitney's saw-gin shares with the inventions of Arkwright and Hargreaves.

An ordinary American saw-gin for cleaning the black-seed or fine Sea-Island cotton, will produce, in a day's work, at least 300 pounds of clean cotton, while the puny Indian machine will hardly yield 3 pounds, or the one-hundredth part of that amount. In an interesting discussion which took place in this Society last year—after the reading of Dr. Forbes Watson's instructive paper—it was stated by an experienced observer, Mr. Brice, that it required a day's labour of 750 hard-working women to clean a ton of Indian cotton, which, of course, implies the same number of gins. Eight American gins would do a little more than this in the same time, and do it better.

Some well-meaning parties have endeavoured to introduce improved cotton gins into India, but the project is

clearly a great mistake. While the Indian gin, consisting of two vertical roller revolving in opposite directions, would hardly cost 4s., a saw-gin would cost at least £8, or more than the worth of the whole farming stock of an Indian peasant, cattle, implements, and seed, while even if possessed of it he would not have the skill to use it or mend it when out of repair. American gins, consisting of a series of saws, and capable of producing, according to their size, from 1,000 to 1,500 pounds of clean cotton a-day, will cost, exclusive of the power, cattle, or steam, which moves them, from £400 to £500, a sum which would exceed the entire agricultural capital of a populous Indian village.

After this account of the cultivation of Indian cotton, its low quality and the smallness of the supply cannot surprise us. In this, indeed, it differs in no respect from other Indian commodities produced under the same inauspicious conditions, that is produced by the rude unassisted industry of Indian peasants. I will give a few examples. The indigo of India was unfit for the markets of Europe until Europeans undertook the manufacture and introduced new processes about 7 years ago. The sugar of India, as long as its manufacture was confined to the natives, was so poor in saccharine matter as to be unmarketable out of India. It is now in the hands of Europeans, and is equal, if not indeed superior in value to the sugar of Jamaica. Indian raw silk was unfit for the manufacturers of Europe until the Italian mode of reeling and culture was introduced, and even now, still much in native hands, it is of little more than half the value of the silk of Italy, and scarcely on a level with that of China. Tobacco has been cultivated over all India for 25 years, and neither soil nor climate can be said to be adverse to the growth of this plant of wide geographical range, but the quality is so inferior that it has found its way into the markets of Europe to but a very trifling extent, and then is scarcely of half the value of American.

The stick-lac of India was a very rude article until Europeans invented the process of extracting a soluble dye from it, and now, in its improved forms, it has become a considerable article of Indian export. Flax is a plant of extensive cultivation in India, but for its seed only, for the art of preparing a textile material from its fibre, a more difficult one than that of producing cotton, has never been known to the Indians. Hemp is apparently a native product of India, and widely cultivated, but generally only for its juice, to produce intoxication. Sheep's wool is, of course, an article the production of which is entirely in native hands. We are now importing it to the yearly value of about half-a-million: but it is hardly of half the value of Cape wool, or of one-third that of Australian. I shall give one more example, for it is a very striking one, that of rice. It is a native plant of India, of immemorial cultivation; and it was only by the accident of an East Indiaman in its homeward voyage touching at Charlestown that it was introduced into Carolina about the middle of the last century. The Carolina rice, however, raised from the Bengal seed, is worth in the London market double the price of Bengal rice.

Wherever a rude husbandry and a cheap manipulation are adequate to the production of commodities suited to the Indian climate, India will be found to yield them abundantly. We have a good example of this in the article of opium, which, although the poppy be an exotic in India, is produced to the yearly value of, at least, £2,000,000, and sold to the Chinese and others for £7,000,000. We have other examples in oil-seeds, in hides and horns, and in Jute, the *Corchorus capsularis* of botanists, a native plant of Lower Bengal. Of these articles, unknown to the trade of India forty years ago, and it may almost be said the discovery of Europeans, we are now importing to the yearly value of between three and four millions, or more than double the value of all the cotton we receive from the same quarter. This is more than reversing the case with regard to America, of our whole imports from which, cotton forms 82 parts in 100.

It rarely happens that mere rude husbandry is equal to the production of any article in perfection; and in the few cases in which it is so, peculiarly favourable soils and climates will be found to be the cause. This is the case with the pepper of Malabar and Sumatra, the cinnamon of Ceylon and the fine spices of the Moluccas, but these are not great staples of trade. Coffee is a great staple, but an article of far easier production than cotton; but still, a small part of Arabia excepted, in which the culture is known to be carried on with skill, it is raised in perfection only under European care. Thus, we see the coffee of Ceylon distinguished in our market as Plantation, or that raised by Europeans, and native, or that produced by the inhabitants of the island; the first being at least 15 per cent. more valuable than the last. The same superiority exists in Java coffee, cultivated under European superintendence, and the coffee of Singapore, all the produce of native industry only, and brought to that emporium from native states. The coffee of St. Domingo, when raised by French care, was the finest in the West Indies, and now, raised by negroes, although freemen, it is excelled by the coffee of Jamaica, under English care, by 20 per cent.; which would seem to imply that African husbandry, in its most improved form, is inferior even to Hindu or Malayan.

Much has been said of the advantage which might be derived from the extension of irrigation to the cultivation of Indian cotton. Cotton, no doubt, like all other plants, requires a sufficient supply of moisture, but its husbandry is eminently a dry field or upland culture, as much so as that of wheat and barley. No plant, indeed, demands less water than cotton. It is not in this respect like the grasses of European meadows, the production of which can readily be doubled by a copious irrigation judiciously applied, and still less does it resemble rice, the great agricultural staple of the tropical and subtropical parts of Asia, the produce of which, by a copious irrigation, can be multiplied even as much as five-fold. Wherever, then, in India there exists an abundant supply of water from periodical rains, or a perennial supply from artificial irrigation, rice will be the chief object of culture, and cotton, pulses, and other plants, merely subsidiary crops. Even in latitudes in which rice is not the chief object of cultivation, cotton does not seem to have any peculiar claim to irrigated land over other crops, for their several advantages can only be determined by the fluctuating prices of the market.

Not only, indeed, is a copious irrigation not necessary to the growth of cotton, it is even destructive to it. "Dryness," says Bryan Edwards, himself an eminent planter in Jamaica, "both with respect to soil and atmosphere, is indeed essentially necessary in all the stages of the growth of cotton, for if the land is moist, the plant extends its leaves and branches, and if the rains are heavy, either when the plant is in blossom, or when the pods are beginning to unfold, the crop is lost."

But there is a cause which enhances the cost of raising cotton, as it does of all other products of the soil in active operation in many parts of India. This has been already adverted to, but demands some further explanation. This is rent, whether paid under that name to the landlord or to the state as tax, or to both conjointly, as is the case throughout India. Its operation, as is now well understood, amounts to this, that it reduces the productive power of all the more fertile lands to the level of the lowest under tillage, that is, diminishes to the lowest standard the productive capacity of the main instrument, the soil, by which the productions of the earth are raised. In some of the most populous parts of India, equally as in England, this principle is in active operation, and hence it is proportionally as costly to raise rice and cotton in these as in England to raise wheat and hemp.

Even in very populous countries, however, there are conditions in which the principle of rent may not operate in the manner I have now ascribed to it. This will be the case when there is much land unoccupied, unfit for the

growth of the staples of food and clothing, but still well adapted to the growth of other valuable articles. China is a case in point; all its fertile lands have been long occupied in the production of corn, cotton, and similar staples. Within the last century its population has been at least doubled, and hence there has been a great increase in the price of all the productions of the more fertile lands. But tea is grown on hill-sides, not adapted to the growth of such staples, and, although there has been a vast increase in its production within the time referred to, there has been no appreciable increase in price, because land sufficiently good for it is still abundant. Rice and cotton, therefore, are imported into China, while tea is exported from it.

Java furnishes another example. It contains above eleven millions of inhabitants, or about 300 to every square mile, and its best lands bear heavy rents. But it has much mountain land, which, although unfit to yield corn and cotton, are well adapted to coffee, which is extensively cultivated. Owing to this state of things, while it is one of the largest exporters of coffee, it exports very little rice, the price of which has sustained a great increase within the last forty years.

Our old provinces of the lower valley of the Ganges are the most fertile parts of India, and just as capable of growing cotton as the valley of the Mississippi. In fact they do grow it largely, but they have a density of population ranging from 300 inhabitants to a square mile up to 800. They not only, therefore, export no cotton, but, on the contrary, import it, just as we ourselves do flax and hemp. They have, indeed, for the same cause, nearly ceased to export rice, for most of what goes under the name of "Bengal" is now, as already stated, the produce of the fertile but under-peopled countries of Arracan and Pegu, which have spare populations, ranging from 9 to 50 to the square mile. The fertile alluvial tract which lies between the Ganges and Jumna, was once a large exporting country of cotton, but now with a population ranging from 350 to 550 inhabitants to the square mile, it has in a great measure ceased to be so, consuming its own produce, independent of what it receives from ourselves in the shape of manufactures.

The really cotton producing districts of India for exportation are all under-peopled, in this respect more resembling new colonies than old countries. The largest cotton-exporting country of India is Gujurat, and its average population to the square mile is 150. Candeish, another exporting province of the Bombay Government, has only 65 to the square mile. Berar, in the centre of India, and which supplies with cotton both Bombay and Calcutta, has a population which ranges only from 44 to 78, and even Bundelcund, the most productive cotton country near the valley of the Ganges has no more than 197. Certain provinces of the government of Madras, extending from the 8th to the 16th degree of latitude, are well adapted to the production of cotton,—export some, and might export much more did Madras possess the good roads, water communication, and safe harbours, which it eminently wants. The average rate of population of these provinces is about 144 to the square mile.

All India may be said to produce cotton, but the parts that produce more than they themselves consume, although a large surface, form but a small fraction of the vast area of that great region. All the most improved and populous portions are, in fact, importers from the less cultivated and less populous ones. This import had been in progress long before our connexion with the country.

But, besides the demand of the populous parts of India on the exporting districts, China becomes a competitor with them and ourselves in the Indian market, the quantity yearly exported to it being about one-fourth part of what is supplied to ourselves. The consumption of the article, on account of its bulk, is understood to be limited to two or three of the sea-board provinces of the empire.

Independent of the disadvantages of a rude husbandry, India has to struggle against all the difficulties of a barbarous and distant conveyance. In a word, the lowest quality of cotton has to be brought to market by the worst roads, the rudest means of transport, and the greatest distances. India has no good roads connecting the producing districts with the ports of export. It has no navigable canals for that purpose, and in so far as cotton is concerned, hardly any navigable rivers. The cotton of Candeish (and this is rather a favourable case) has to be conveyed by rude carts for 180 miles to the first seaport, from which it has to be shipped to Bombay, and there re-shipped for England.

The cotton of Berar—a country in the centre of India—has to be conveyed by land a journey of 400 miles to Bombay, or by 400 miles of land and 500 of river transport to Calcutta. There is no road for wheel-carriage in either case, and the cotton is conveyed on bullocks' backs. Every day, in a journey of at least forty days, the bullocks are loaded and unloaded, the bales being left at each resting place on the naked earth, exposed to the sun and rain.

The facility, cheapness, and speed, which the American cotton States, and more especially those of the Gulf of Mexico, possess in the matter of transport, make but a contrast to the rude means of India. Even when there is a necessity in America for having recourse to land carriage, instead of the backs of oxen, we find well covered and convenient waggons.

Over the extensive coast of India we have not above three convenient ports of export, while within the more limited coast of the American cotton States there are not less than thrice that number. Besides this, from the American ports to the European marts the sea voyage is certainly not above one-fourth part the length of that from the nearest part of India.

The benefits to be derived from Indian railways have been much insisted on, and I have no doubt they will increase the supply of cotton, and materially ameliorate its quality by bringing it in a cleaner state to market. Experience, however, has sufficiently proved that for the conveyance of cotton, or any other bulky commodity, railways cannot compete with navigable canals, and still less with great rivers, admitting at all seasons of the navigation of heavy steamers. But whatever benefit may be derived from railways, it is evident that China, and the cotton consuming provinces of India itself, will, equally with England, participate in it, and that consequently our relative position to these competitors will remain the same as now.

As there is assuredly nothing in the soils and climates of India inimical to the production of good cotton, what is really wanted to insure it is skill, care and capital, and we know, from our experience of other commodities, that these have never been applied except by intelligent and enterprising Europeans. Europeans have applied themselves successfully to the production of silk, sugar, indigo, and lac-dye, but not to that of cotton, which is in the same rude condition that all these articles would certainly still have been in had they not engaged the attention of Europeans. The reason why cotton has not, like them, attracted European attention appears to me very obvious. It is nearly as much a mere product of agriculture as corns or pulses, whereas the productions in which Europeans have engaged partake at least as much of manufacturing as of agricultural industry, affording means for the exercise of skill and concentrated care and attention, impracticable in the processes of mere husbandry. Even, indeed, in respect to the commodities which have received decided improvement, it should be noticed that this is chiefly confined to the processes of manufacture. For the indigo plant, the sugar-cane, the palm yielding sugar, and the mulberry, the raw materials are still chiefly cultivated by natives, and according to the immemorial and barbarous rules of Hindu husbandry.

But, independent of the fact that the attention of Europeans is naturally confined to the production of the most profitable articles, or those in which their superiority

over the natives chiefly lies, the existing state of society in India is eminently unfavourable to their engaging in any purely agricultural pursuit, owing to the imperfect administration of justice, the notoriously bad administration of police, the complexity of titles to land, and native roguery.

In the districts in which cotton would be most advantageously grown, an European could not become a proprietor of land at all, for the plain reason that there is no land to buy, high and fluctuating taxation having deprived it of saleable value. Even if in possession of it, he would still be, like the native cultivator, the mere occupant of the land he tilled so long as he continued to pay the contributions exacted of him. In the cotton districts, therefore, there are no European settlers, nor is it at all likely that there should be in the present state of Indian government. The European settler, to enable him to grow good cotton, must possess the fee-simple of the land he cultivates—must be protected by good laws, and liable only to moderate and fixed taxation. Until these conditions are realised, we must despair of improving the quality of Indian cotton.

Our importation of cotton from all other countries than India and the United States is very inconsiderable, not exceeding 7 parts in a 100 of our whole supply. Our largest importation is from Egypt, but it forms but a fraction of $\frac{1}{32}$ part of our supply. Cotton was unknown to the ancient Egyptians, and its culture was most probably first made known to them by their Arabian conquerors in the 7th century. Its culture for exportation is a very recent affair, dating only from the year 1821, when Europeans introduced American seed and the American husbandry. This improved cotton culture, then, has had a trial of 40 years, and its produce has increased but in a small degree. In the nine years from 1850 to 1858, the increase in the production of Egyptian cotton was about 11 per cent.; in American it was 46 per cent., or above four times as great.

In 1849, the quantity which we ourselves imported from Egypt was 155,132 cwts., and in 1859, it was 336,313 cwts., being the largest supply which it ever yielded. Ten years, then, added to our supply, no more than a poor 181,181 cwts. If all Egypt watered by the Nile were under cotton culture, and no other part of the country is fit for it, its produce would be far from sufficient to meet our demands. That, however, is an impossible case, for the fertile land in Egypt is equally well fitted for the growth of other agricultural products as it is for cotton, a sufficient proof of which is that it not only feeds its own population, but furnishes ourselves with various corns to the yearly value of a million sterling.

Our next largest supply comes from Brazil, a region extensive, fertile and genial, and which, were its industry Anglo-Saxon instead of Portugese, would, no doubt, furnish us with a large supply of good cotton. It does not do so. In 1849, our import from it was 274,893 cwts., and has never reached that amount in the ten years which had elapsed to 1859, when the quantity was no more than 200,705 cwts. That the soil and climate of Brazil are favourable, and the agricultural skill considerable, is to be inferred from the fact that the average value of all Brazilian cotton is by 13 per cent. better than the average value of all American, and full 60 per cent. better than that of all Indian cotton. I take these proportions from the valuations of the brokers employed by the Board of Trade.

The culture of cotton in Brazil, as indeed in all countries except the Gulf States of America, is but a concomitant crop with other staples, and this is sufficiently evident from the character of our own importations from it, for I find that whereas in 1859 our import of cotton from it was only of the value of £744,020, our imports of sugar and coffee reached the value of £2,788,536, or above three times as much.

The cultivation of cotton in Brazil, as in several other places, has been superseded by sugar in the plains and coffee in the hills. Brazil, in fact, could not compete with America in cotton, but it could easily beat America in sugar, and it naturally selected the latter as the principal object of its husbandry.

A very insignificant quantity of cotton has of late years been imported from Chili and Peru. The largest import from Chili was in 1856, when it amounted to 4,393 cwts., and since then it seems to have ceased altogether. The largest import from Peru was also in 1856. In 1858 it amounted only to 2,484 cwts., while in 1859 it was 180 cwts. less than this. From Chili and Peru, then, we can entertain no hope of any material supply. The industry of these two countries takes a direction very different from that of mere husbandry, as must be obvious from the fact that, on the average of the five years ending with 1859, they furnished us with cotton to the value of little more than £11,000 a-year, while our imports from them of wool, minerals, and other products, averaged £5,400,000. The cotton of these countries is, indeed, chiefly worth notice as affording proof of the variety of climate and locality in which fine cotton can be produced; for, to judge by the valuation of the public returns, the cotton of both countries is of a very superior quality; that of Peru, indeed, the very finest in the English market, being full 40 per cent, more valuable than the average of American cottons.

In all the countries between Bengal and China, and in all the considerable islands of the Malayan and Philippine Archipelagos, the cotton plant has been immemorially an object of cultivation; indeed, after corn, the chief object of their husbandry. It is of many varieties, depending more on soil and climate than modes of culture; but everywhere it is a coarse, inferior article, usually below even that of India. Small quantities have been exported from such countries as Siam and the Philippines to China, but generally their whole produce is consumed in the place of production. In Java, for example, eleven millions of people have to be, for the most part, clothed with it, and, therefore, exportation is scarcely more possible there than it is from Bengal within the tract inundated by the Ganges. From the great increase, indeed, which has of late years taken place in its population, and the arbitrary diversion of its industry to what go under the name of Colonial productions, this fine island has, as already mentioned, in a good measure ceased to be what it once was, a great exporter of corn.

As to China, which some parties have idly enough indicated as a source of cotton supply, it is sufficient to say, that ever since we have known it, it has been an importer of cotton as it has been of corn, usually receiving from our own Indian territories of the first of these articles to the annual value of from two to three millions.

Our West Indian Colonies, Insular and Continental, which seventy years ago furnished us with our chief supply of cotton, supply us at present with but comparatively a very trifling one. In 1847, the quantity was between eleven and twelve thousand hundred-weights, and in 1859 it had fallen to less than one-half this quantity. In the last-named year, the same colonies supplied us with the various productions of the sugar-cane to the value of more than nine millions sterling. The cane, in fact, being more congenial to the soil, climate, and industry of these tropical colonies, has superseded cotton, and there seems no probability of the culture of the latter being revived. Bryan Edwards himself, as already mentioned, a planter of Jamaica, our most fertile and finest island, expressly tells us in his "History of the West Indies," that "of all the productions to which labour is there applied, the cotton plant is, perhaps, the most precarious. In its first stage it is attacked by the grub; it is devoured by caterpillars in the second; it is sometimes withered in the blast, and rains frequently destroy it, both in the blossom and the pod."

There seems nothing to blame in the West Indian mode of cultivation, which, although less skilful than that practised in America, is essentially the same, and indeed the

latter was probably borrowed from it. The main difference was in the gin, which, instead of the effective and powerful American one, was a small instrument, a considerable improvement on the Indian, consisting of two parallel rollers moving in opposite directions, set in motion by the foot, and costing from two to three pounds.

The unsuitableness of the West India Islands generally for the production of cotton is attested by its supercession in the foreign colonies by the sugar-cane in the same way it has done in our own. Thus, the fine islands of Cuba and Porto Rico are said to furnish Spain with no more than three thousand hundred-weights of cotton. They furnish ourselves with none at all, while we imported sugar from them in 1859 to the value of near £5,300,000. The only foreign West Indian colony which supplies us with cotton at all is the Danish one of St. Thomas, but the quantity is small, short of ten thousand hundred weights, and I only mention it on account of the excellent quality of the article, which is equal to the Peruvian, and superior to the average of the American by full 40 per cent.

St. Domingo, which as a French colony furnished France with its chief supply of cotton, produces at present, I believe, none at all. It does not even produce sugar, in which, as a colony, it was so prolific. But it produces coffee, the lowest in quality known in the European markets, an article, as already mentioned, of far easier growth than cotton or sugar. Had the island continued an European colony, it is probable that its cotton would have been beaten out of the market by that of America, and been superseded by the cane. Its present state, then, is ascribable to its having possessed an African Government, that is a rude Government, for above half a century.

Turkey was the country which alone furnished us with cotton when our manufacture was confined to fustians, and it still supplies us with a trifle; in 1859, for example, with 3,551 cwts., of the value of £11,313 of a fair quality, for it was full 18 per cent. more valuable than Indian. I mention Turkish cotton only because I have lately seen in the newspapers the prospectus of a scheme for obtaining a supply of it through a new Association, to be called "The Cotton Bank of Anatolia." But assuredly anarchical Turkey—and more especially the most disorderly portion of it, the Asiatic, the only one fit to grow cotton—is not the country in which rational Europeans will invest their capital in the production of cotton, and unless they do, the unaided Asiatic tribes are just as incapable of furnishing an ample supply of good cotton as are the Hindus unless assisted by the British Government.

Like India, Turkey is capable of yielding commodities for commercial exchange of rude production, but not those demanding careful husbandry and skilful manipulation. The kind of commodities which the rough industry of the Turks is capable of supplying may be judged of by our own importations, taking the year 1859 for an example. Some of them are almost spontaneous products of the earth or water, as sponge, galls, and valonia, with which Turkey furnished us to the value of £560,000. Goat's wool is another article which owes very little to art, and with this it supplied us to the value of more than £340,000. Other commodities it owes far more to climate than to industry, such as figs, raisins, madder, and opium, which we received from it to the value of £850,000. Of maize, the most easily produced of all the cereals, Turkey and its dependencies provided us with our largest supply of which the value exceeded a million. The case of Turkey, then, is a close parallel to that of India.

Africa has been indicated as a quarter from whence an ample supply of good cotton might be obtained; and, in so far as mere soil and climate are concerned, it is impossible that a region which, as far as the mere growth of this article is concerned, embraces 32 degrees on each side of the Equator, should not possess many suitable localities. It is grown in the colony of Natal, from which, on the average of the three years ending with 1859, we imported between eleven and twelve thousand hundred-weights, of the value of better than £32,000, of a quality, however, inferior to American by a pound sterling a hundred weight. Even here, however, the culture is giving way to that of the cane.

But it is tropical Africa inhabited by rude negro tribes, and not extra-tropical colonised by British subjects, which has been of late so much insisted on as a source of cotton supply. When I look to the history of cotton, I feel obliged to pronounce all hope of such a supply as utterly delusory. Suitable soil and climate no doubt exist in abundance, but every other element necessary to the successful and effectual production of supply are absolutely wanting. Experience has taught us that skill and capital are indispensable to the production of cotton for our purpose, and these cannot live except where there is perfect security of life and property, a condition which has never existed, and does not now exist, under any negro government. Europeans will assuredly never invest their skill and capital in tropical Africa under a negro government, and Africans without them are as incapable of furnishing good cotton as they are of manufacturing fine cutlery or correct time-keepers. The Hindus, a comparatively civilised people, have been growing cotton for ages and are yet incapable of producing an article that can compete with the produce of civilised industry. What reasonable hope then can be entertained that the negroes of Africa, so far below Hindus, should be able to achieve what Hindus have utterly failed to accomplish?

Cotton is found to be grown all over tropical Africa, and is by some pronounced to be an indigenous plant. I believe it to be an exotic, or the ancient Egyptians, the most civilized of all African people, would have known it, which it is well understood they did not. Even, however, if it were indigenous and grew freely and almost without cultivation, that would in no respect affect the question of the capacity of Africa to furnish us with such a supply as would make us independent of America. Cotton fit for the coarse fabrics of the inhabitants may be, and no doubt is, grown in sufficient abundance, but to say that an article fit for our use can be produced in tropical Africa, seems to me no more reasonable than it would be to insist that every country in which the vine grows freely is capable of producing the wines of France and Spain.

I find that cotton was imported by us, for the first time, from the West Coast of Africa, in 1858, when the quantity amounted to 2,116 cwt. This cotton, I believe, resulted from the exertions of a benevolent and enterprising English merchant, an isolated example, not, I should think, very likely to be imitated. I greatly respect and honour the exertions of Mr. Clegg, although I may think them misapplied.

Of late, the eastern side of Africa has been spoken of, in my opinion, most idly, as a probable source of that cotton supply which the western has failed to yield. The inferiority of the eastern compared with the western coast, appears to me most conspicuous, judging by the descriptions given of it by recent travellers. It wants the great navigable rivers of the western side, and hence wants its rich alluvial lands. Its inhabitants are more rude and fewer in number than those of the west, and the country is at least twice as far away from the consumer, and this, too, by a more difficult navigation.

We are told that the eastern side of Africa produces cotton of more than one variety. No doubt it does, or it would be a singular exception to all the tropical countries in the old world with which we are acquainted, every one of which produces cotton of several varieties. But this fact is very remote, indeed, from a capacity to produce cotton for our manufacture.

That very enterprising and successful traveller Dr. Livingstone has indicated a particular locality of the eastern side of Africa as eminently suited to the production of cotton. This is a plateau near the River Shire, a tributary of the Zambesi, and not above 150 miles distant from the coast. His own account is, however, ample

evidence of its incapacity. The inhabitants are few, rude, and anarchical, the River Shere has 30 miles of cataracts, and the Zambesi is navigable only for boats in its upper course, while its lower is infested by malaria. A cotton supply, then, from tropical eastern side of Africa is a day-dream, in my opinion, never likely to become a reality.

The natives of tropical Africa, although it be wholly beyond their capacity to produce a supply of cotton to meet our wants, have shown that they are quite equal to the production of crude commodities compatible with the rude condition of their knowledge and industry. In this respect, although at a wide distance, they are in a similar condition with the people of India as compared with Europeans. The most remarkable of the crude commodities which they produce is palm oil, the produce of a native palm of the western side of the continent, and of which we ourselves are now importing yearly to the amount of some 35,000 tons, of the value of full £1,500,000. This humble palm, which the botanists have named *Elais Guiniensis*, has contributed more to the suppression of slavery than the blockading squadrons of France and England, and, indeed, grown into a formidable rival to Clarkson and Wilberforce. From the same side of the continent we import such coarse and hardy commodities as the ground-pea for its oil, capscium and ginger, but not one article implying skill in husbandry or preparation. From the eastern side, the sole product of the soil which we import consists of a few cloves of inferior quality raised in the island of Zanzibar. The commercial resources of this part of Africa have yet to be developed,—indeed, for that matter, to be discovered.

The French have of late been attempting to grow cotton in Algeria, a country lying within the same parallels of latitude as the cotton states of America, and where consequently, success might have been looked for. The project, however, has totally failed, even when bolstered by by the handsome prizes held out by the Government.

But of all the schemes for obtaining a supply of cotton, the most wild and thoughtless is that of hoping for one from the Feejee Islands, one of the most remote portions of the globe from us. These islands are but mere specks in the broad Pacific, and two of them only of any considerable size, the rest being, for the most part, uninhabited and uninhabitable rocks. Taking the whole group, however, its area amounts to no more than 1,730 square miles, or 1,107,200 acres. If, then, the whole group was fit to grow cotton, and its whole surface from year to year, without rest or fallow, covered with cotton, each acre yielding as much as the alluvial soils of the Mississippi, or 285 pounds, the whole produce of the Feejees would amount to no more than 2,826,357 cwts., or only between one-fourth and one-fifth of our last year's supply.

But any such supply is impossible, for the group is eminently mountainous, and mountain tops and mountain acclivities are unfit for the growth of cotton. Fertile plains and valleys only are so, and if these amount to a tithe of the surface of the islands, it is a large allowance, and far more than the proportion of the area of Britain fit to grow wheat. This area would reduce our cotton from the Feejees to 282,635 cwts., or little more than one forty-fourth part of last year's cotton supply. Even that much, however, would be beyond all hope, for a large portion of the fertile land must, of necessity, be appropriated to the production of the food of the inhabitants, who have been computed to number from 130 to 150 thousand.

Samples of very good cotton are said to have been produced from the Feejees, and I have no doubt of it. The wonder, indeed, would be that any country should be found within 25 degrees of the Equator that would not, with a little care, produce a sample of good cotton. That is, however, quite beside the real question at issue, the capacity of a country to produce such a quantity of good cotton as would contribute to make us independent of America; and in this sense the Feejees must with reason be considered a deplorable and indeed a ridiculous failure.

There are, as far as my information extends, but two countries that are likely to furnish us with a fair supply of good cotton, and this not in substitution of the cotton of America, but as considerable auxiliaries to it. These are our recently acquired territories on the eastern side of the Bay of Bengal, including Arracan, Pegu, and Martaban, but excluding those on the Tennaserim coast, and the lately formed colony of Queensland in Australia. I shall describe the little I know of them.

Our territories on the eastern cost of the Bay of Bengal embrace four degrees of latitude extending from the 16th to the 20th degree, and contain an area of 64,450 square miles, or are larger than England and Wales by at least 10,000 miles. Their scanty population ranges from 8 to 50 inhabitants to a square mile, or on an average about 26, not one twentieth part of the average density of the population of lower Bengal. The country is watered by one great river and three considerable ones, each with branches and affluents, forming an extensive network of internal boat navigation, so that the territory, on a minor scale, bears no inconsiderable resemblance to that of the Lower Mississippi. The coast has at least four safe harbours to which there is inland communication by water. The greater portion of the country is a rich alluvial plain, producing, as before stated, by far the largest amount of the rice which is exported from British India under the name of "Bengal," a commodity of which we ourselves imported in 1859, about 64,000 tons, of the value of £686,000, forming 88 parts in a 100 of all of that grain which we imported.

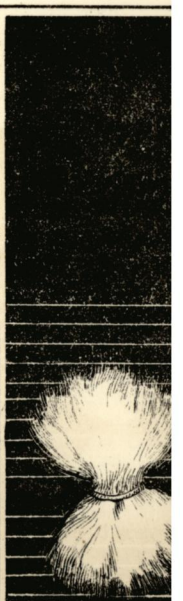
The wild or unoccupied land must, of course, from the sparseness of the population, be large, and there ought to be no more difficulty in obtaining the fee-simple of it by Englishmen, than there is in Canada or Australia. This would be a necessary preliminary to the production of good cotton. If the local population—a very docile one—were not found sufficient for the requisite labour, the exuberant population of India is close at hand to make up the deficiency. The periodical rains of great severity, extend from April to September, and during their continuance, the cultivation of cotton could not be carried on. Sown in March, however, the crop would have six months of dry weather to ripen, which, it may be presumed, would suffice. A rice crop, in this case, would occupy the land during the rains, so that there would be a cereal and a cotton crop within the year. I resided for some time in the country I am now giving an outline of, and the impression which my acquantance with it has left is, that it seems better adapted to the culture of the cotton plant than any other part of India. Experience alone, however, must be the only test of its practical adaptation.

Of Queensland we know, as yet, far too little to enable us to speak confidently of its capacity to produce cotton. It is described, however, as having a fertile soil with sufficient moisture, and to possess some commodious harbours. It certainly lies within latitudes (that is from the 30th degree south to the tropic), corresponding with those parts of Brazil which produce cotton superior to the average of American. Should Queensland be found adapted to the cultivation of cotton, the heat of the climate will necessitate Asiatic labour, and this may be obtained from India, as in the case of Ceylon and the Mauritius, or from China, equally ready to yield it, and indeed, yielding it already largely to Australia in the case of the gold mines.

From the facts which I have adduced in the course of this paper, I must come to the conclusion that there exists no reasonable ground for apprehending any serious deficiency in our supply of cotton, although in cotton, as in every other product of the soil, fluctuations must be expected which no care can obviate. Our chief reliance, must long, in my opinion, be on Anglo-Saxon America, which at present furnishes us with four-fifths of the value of all that we consume. This mere name, however, does not imply that we receive the whole from a single country, for no fewer than seven sovereign states, each as large as an European kingdom, contribute to our supply,

No.	Place of Growth.	Length of Staple		
		Min.	Max.	Mean.
		Inches and Decimals.		
1	Surat	1·00	1·20	1·10
2	„	·80	1·20	1·00
3	„	1·00	1·20	1·10
4	Guzerat	·90	1·20	1·05
5	Broach	·80	1·00	·90
6	„	·60	·90	·75
7	Dharwar	·90	1·20	1·05
8	„	·90	1·10	1·00
9	„	·90	1·10	1·00
10	„	·80	1·00	·90

TWO INCHES DIVIDED INTO TENTHS

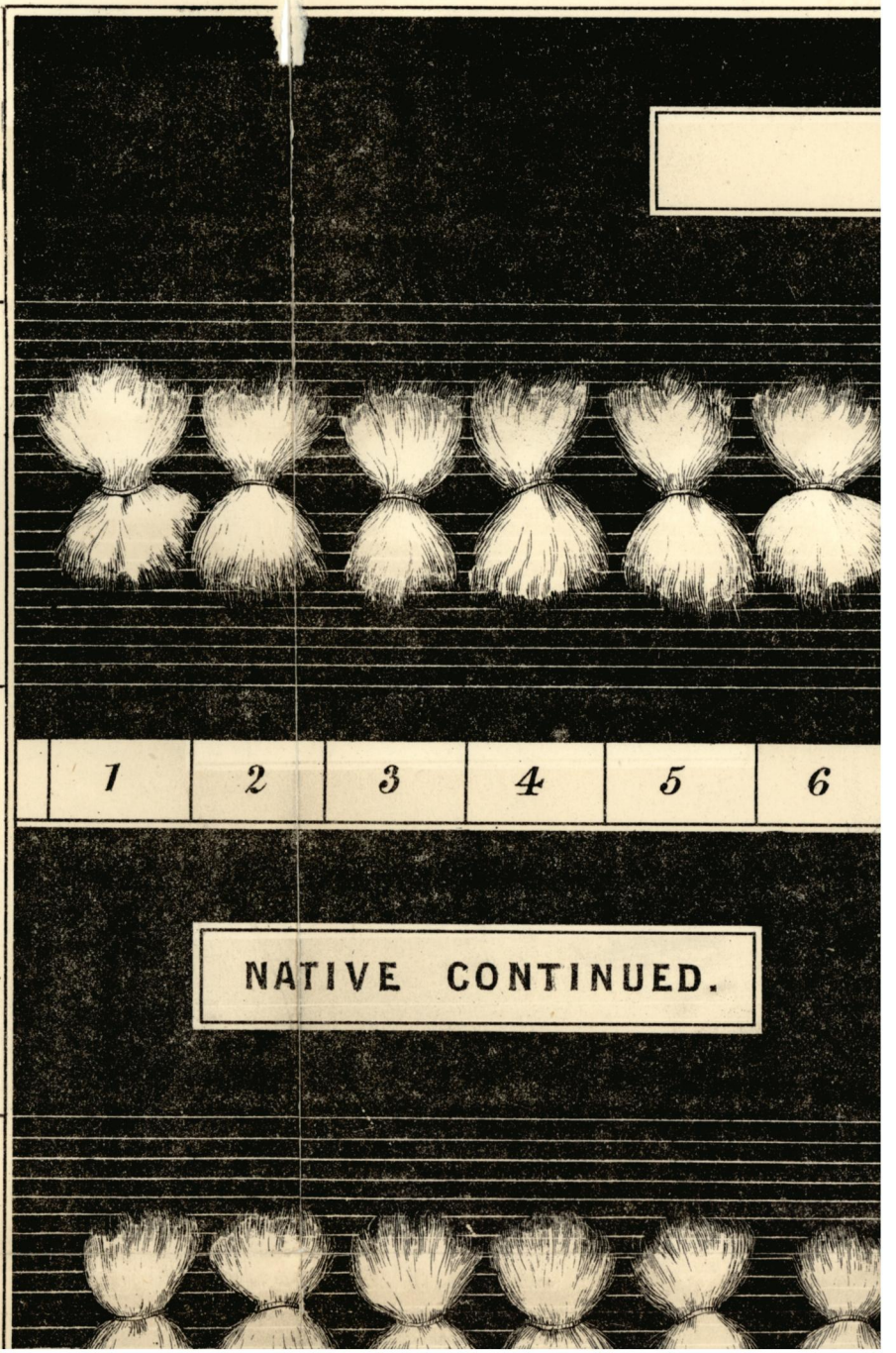


1

No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
21	Madras	·80	·90	·85
22	Agra	·60	·80	·70
23	Gwalior	·70	·90	·80
24	Jeypoor	·70	·90	·80
25	Jullunder Doab	·70	·80	·75
26	Delhi	·50	·80	·65
27	Dharwar	1·15	1·50	1·33

DIVIDED INTO TENTHS

COTT

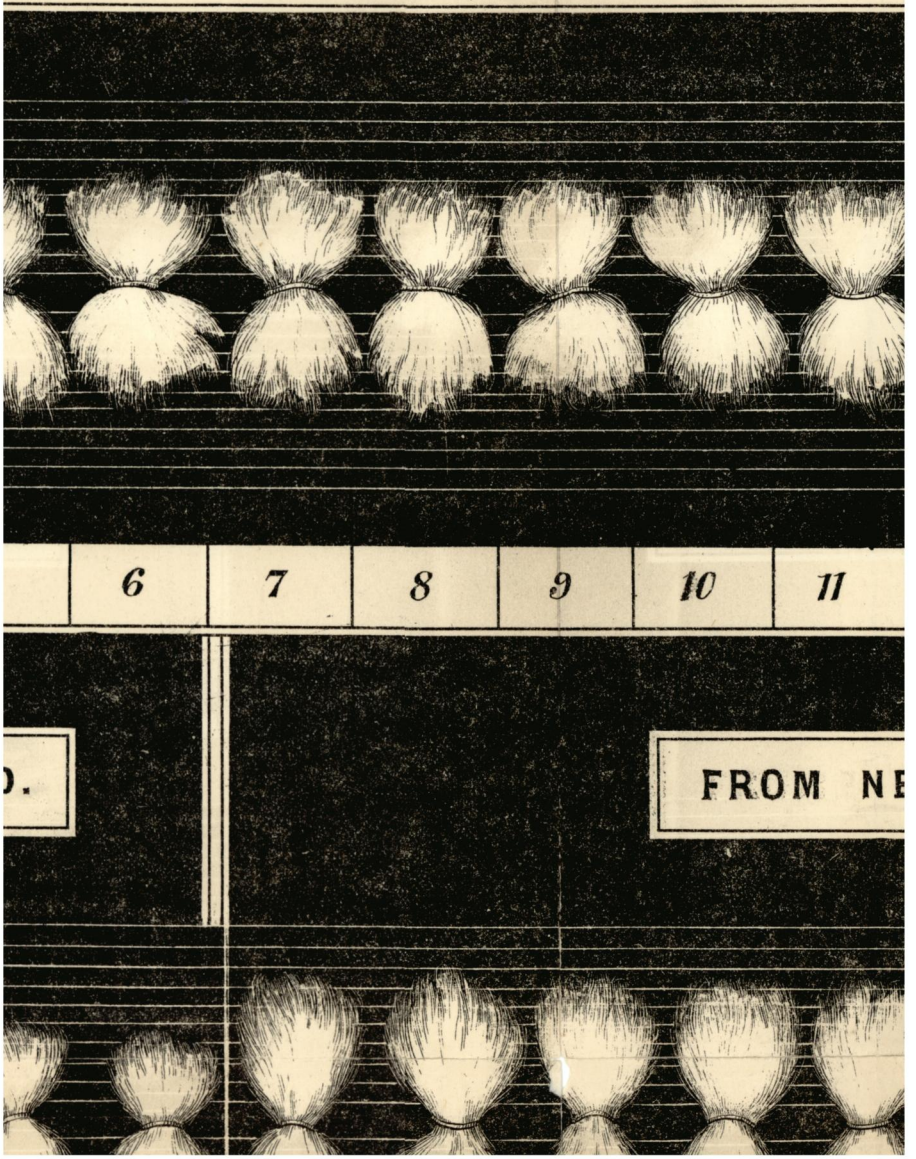


PLATE

OTTON GROWN

COMPARATIVE LENGTH

NATIVE OR I

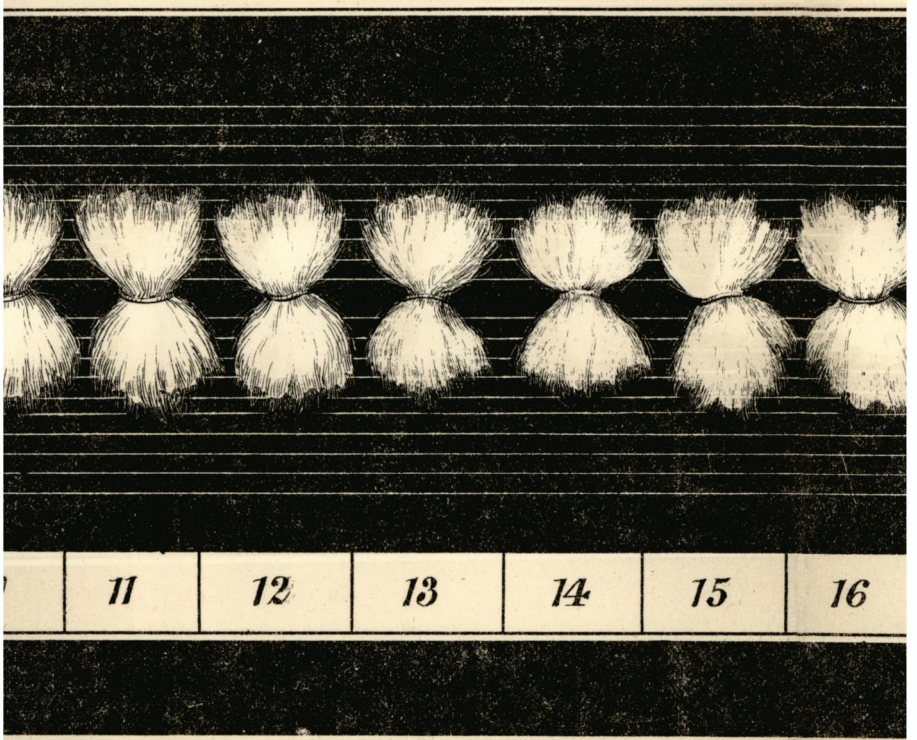


ATE I.

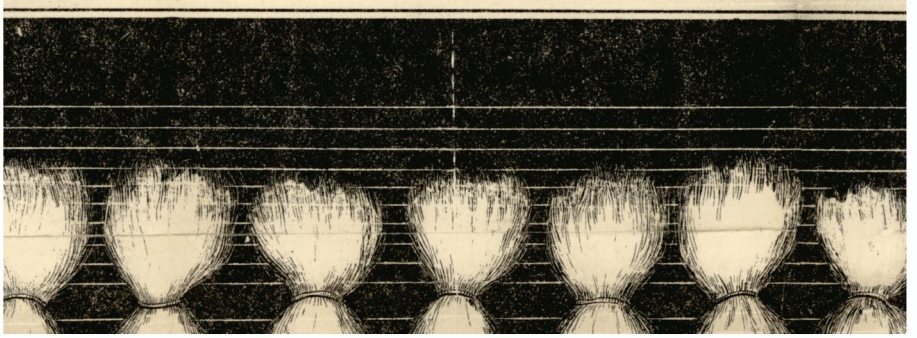
OWN IN INDIA

LENGTHS OF STAPLE.

OR INDIGENOUS.

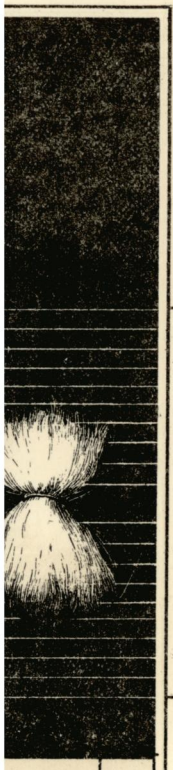


FROM NEW ORLEANS OR AMERICAN



DIA,

5
16
17
18
19
20
ERICAN SEED.
TWO INCHES DIVIDED INTO TENTHS
TWO INCHES DIVIDED



TWO INCHES DIVIDED INTO TENTHS

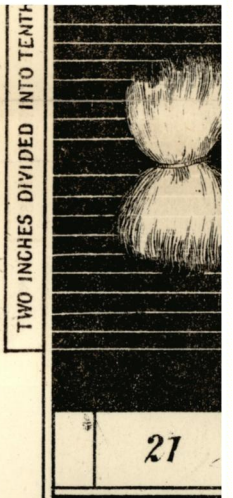
20

TWO INCHES DIVIDED

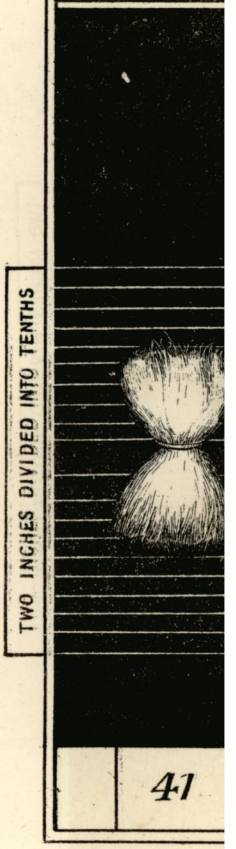
No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
11	Tinnevelly	·90	1·20	1·05
12	„	·80	1·10	·95
13	Trichinopoly	·60	1·00	·80
14	Tinnevelly	·60	·90	·75
15	Coimbatore	·70	1·00	·85
16	Candeish	·90	1·10	1·00
17	Berar	·80	1·00	·90
18	„	·70	1·00	·85
19	Ahmednuggur	·70	1·00	·85
20	Belgaum	·70	·90	·80

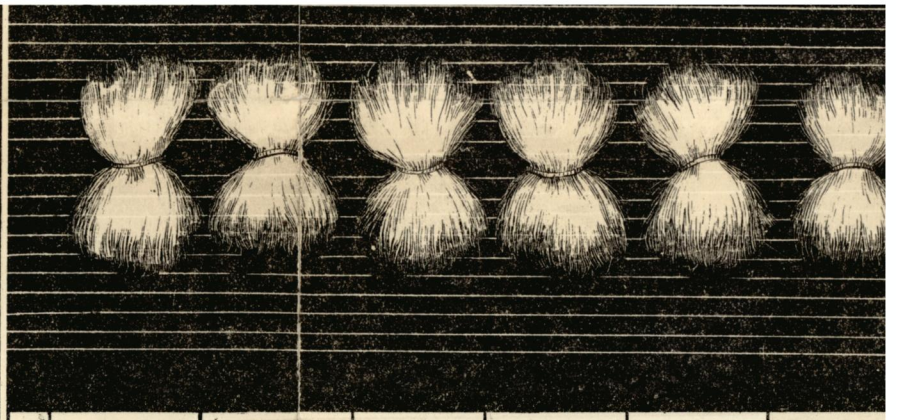
No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
31	Dharwar	1·30	1·70	1·50
32	„	1·00	1·20	1·10
33	„	·90	1·20	1·05
34	Bunkapoor	·90	1·20	1·05
35	Dharwar	1·30	1·50	1·40
36	„	·90	1·10	1·00
37	„	·80	1·00	·90

24	Jeypoor	·70	·90	·80
25	Jullunder Doab	·70	·80	·75
26	Delhi	·50	·80	·65
27	Dharwar	1·15	1·50	1·33
28	Lingasoor	·90	1·20	1·05
29	Guzerat	·90	1·30	1·10
30	Dharwar	1·10	1·50	1·30



No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
41	Belgaum	·80	1·10	·95
42	Travancore	1·10	1·50	1·30
43	Mysore	·90	1·20	1·05
44	Bolarum	·80	1·00	·90
45	Sheopoor	·90	1·10	1·00
46	Tenasserim	1·10	1·30	1·20
47	Bolarum (Deccan) ...	·90	1·10	1·00
48	Bengal (near Calcutta) ...	1·00	1·30	1·15
49	Mysore	1·40	1·75	1·57
50	Dharwar	1·50	1·70	1·60





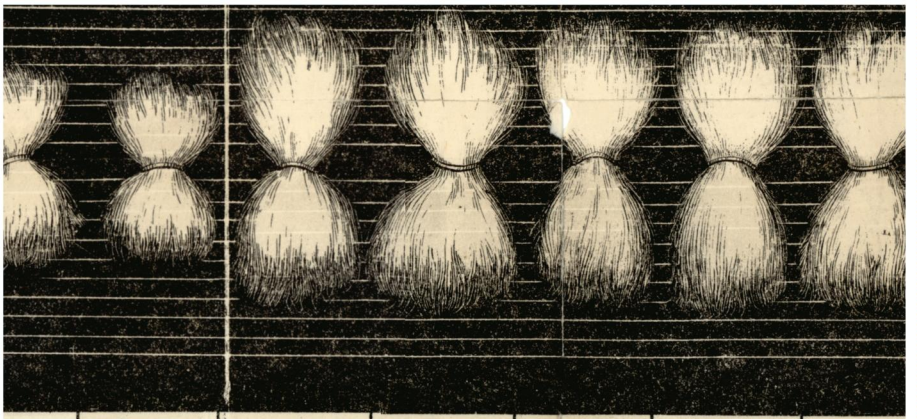
21	22	23	24	25	26

AMERICAN CONTINUED.

41	42	43	44	45	46

SU

Place of Growth.	
India	Ind Exc Sea
United States ..... Sea Islands ..... S. America ..... Egypt	N. Lon Bra Egy



5 | 26 | 27 | 28 | 29 | 30 | 31

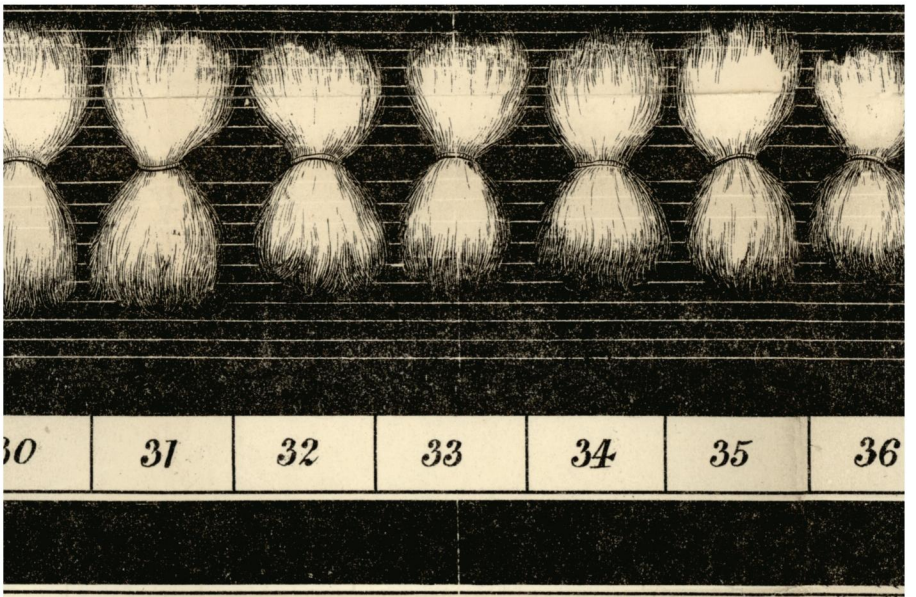
D.

FROM S

45 | 46 | 47 | 48 | 49 | 50 | 51

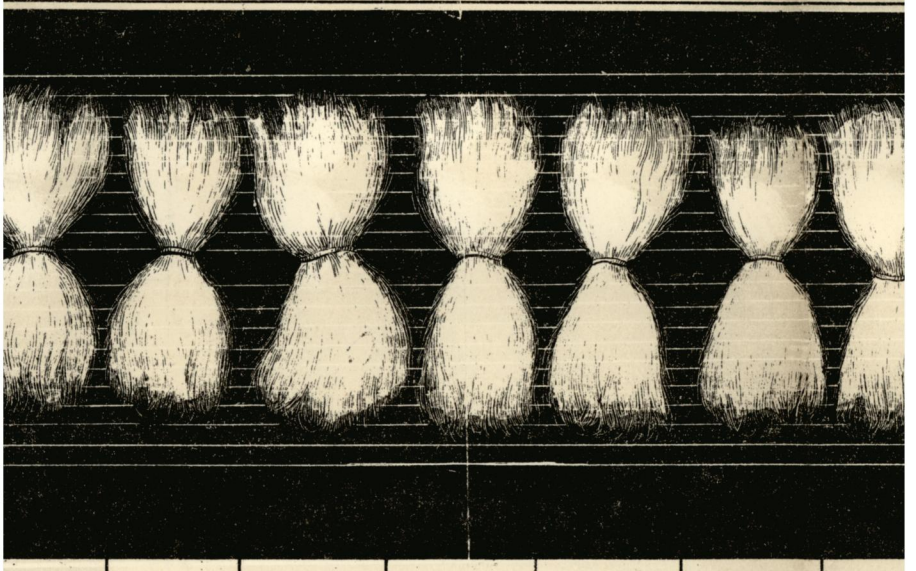
SUMMARY OF THE RESULTS FRO

f Growth.	Description of Cotton.	Length of Staple. Min.	Max.	Mean.
		Inches and decimals.		Inches &
.....	Indigenous or Native	·77	1·02	·89
.....	Exotic or American	·95	1·21	1·08
.....	Sea Island and Egyptian	1·36	1·65	1·50
es	N. Orleans or Uplands	·88	1·16	1·02
.....	Long-stapled	1·41	1·80	1·61
.....	Brazilian	1·03	1·31	1·17
.....	Egyptian	1·30	1·52	1·41



30 | 31 | 32 | 33 | 34 | 35 | 36

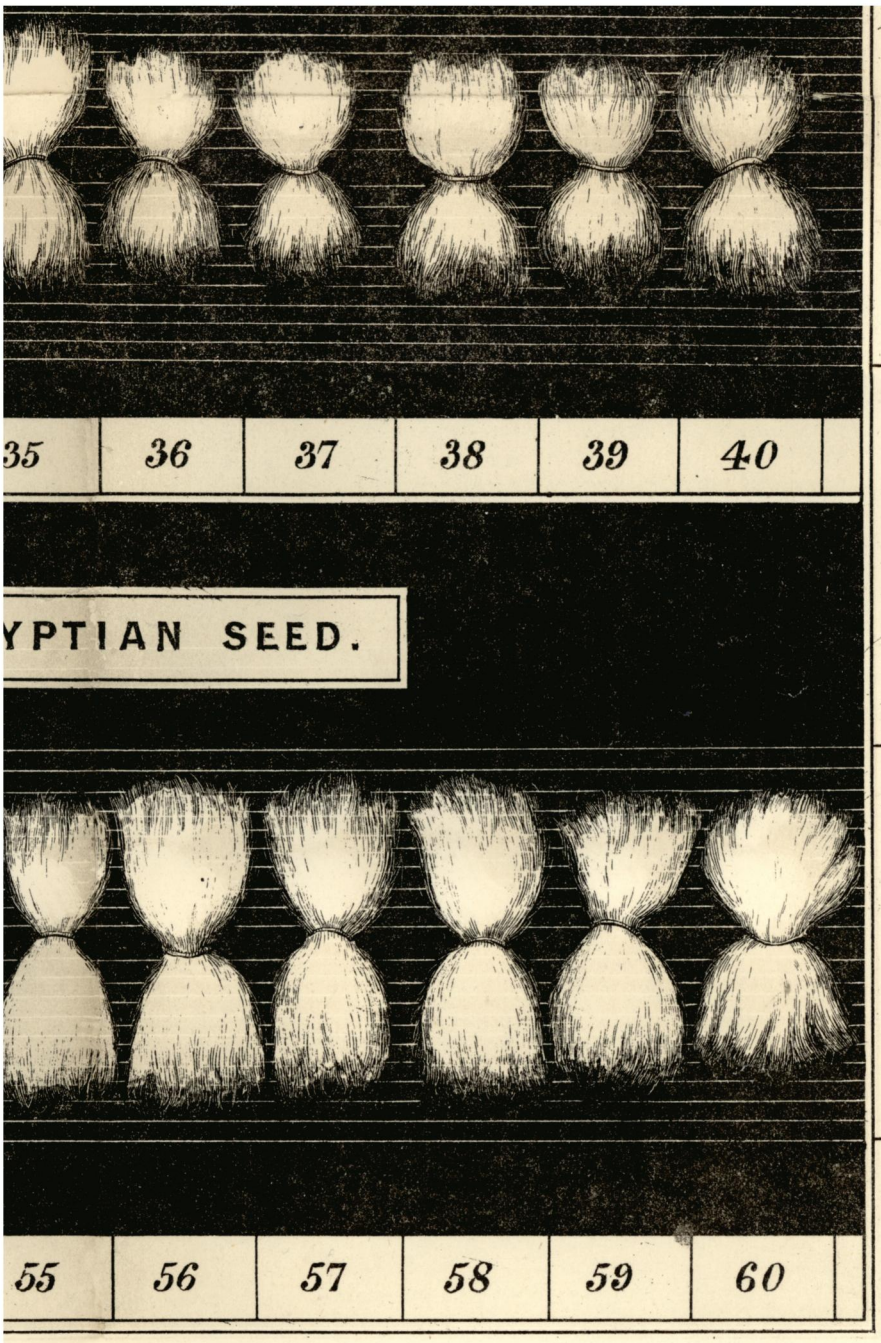
FROM SEA ISLAND AND EGYPTIAN



50 | 51 | 52 | 53 | 54 | 55 | 56

LTS FROM PLATES I. AND II.

h of Staple.			Diameter of individual Fibres or Filaments.			
Mean.			Min.	Max.	Mean.	
cimals.	Inches & fractions		In decimals of an inch.			Fractions of inch
·89	$\frac{89}{100}$		·000649	·001040	·000844	$\frac{1}{1185}$
1·08	$1\frac{8}{25}$		·000654	·000996	·000825	$\frac{1}{1212}$
1·50	$1\frac{1}{2}$		·000596	·000864	·000730	$\frac{1}{1369}$
1·02	$1\frac{1}{50}$		·000580	·000970	·000775	$\frac{1}{1290}$
1·61	$1\frac{61}{100}$		·000460	·000820	·000640	$\frac{1}{1562}$
1·17	$1\frac{17}{100}$		·000620	·000960	·000790	$\frac{1}{1265}$
1·41	$1\frac{41}{100}$		·000590	·000720	·000655	$\frac{1}{1526}$

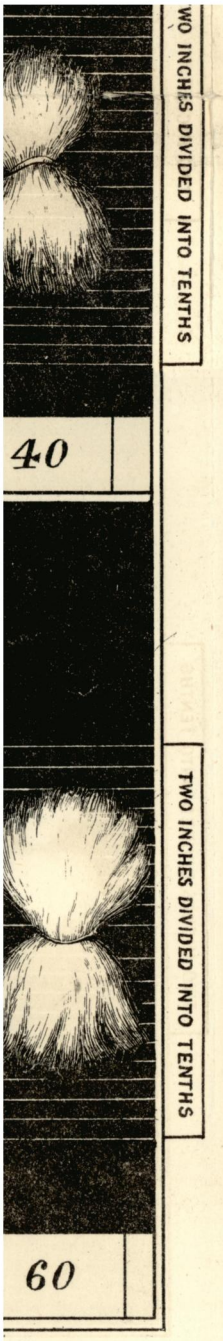


laments.	
Mean.	
	Fractions of inch.
44	$\frac{1}{1185}$
25	$\frac{1}{1212}$
30	$\frac{1}{1309}$
75	$\frac{1}{1290}$
40	$\frac{1}{1562}$
00	$\frac{1}{1265}$
55	$\frac{1}{1526}$

J For

Reporter on t

India Of



33	„	·90	1·20	1·05
34	Bunkapoor	·90	1·20	1·05
35	Dharwar	1·30	1·50	1·40
36	„	·90	1·10	1·00
37	„	·80	1·00	·90
38	Coimbatore	1·10	1·20	1·15
39	„	·80	1·10	·95
40	Belgaum	·90	1·10	1·00

No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
51	Dharwar	1·50	1·80	1·65
52	„	1·50	1·70	1·60
53	„	1·50	1·80	1·65
54	„	1·30	1·70	1·55
55	„	1·40	1·70	1·55
56	„ (Hooblee) ...	1·40	1·80	1·60
57	„	1·40	1·60	1·50
58	„	1·40	1·60	1·50
59	„	1·20	1·50	1·35
60	„	·90	1·10	1·00

J Forbes Watson;

orter on the Products of India;

India Office July 1860.

—all, too, competing with one another to make that supply as cheap, good, and abundant as possible.

The integrity of the cotton manufacture is indispensable to our prosperity, but the cultivation of the plant is, if possible, of still more vital importance to the Southern States of America. We derive our chief supply from them, and we are by far their best customers. There exists between us, consequently, a mutual and profitable dependence, which promises a long duration. If other countries can supply us with better cotton than America, our market, the best in the world, is free to them, and no doubt they will furnish it, but it does not appear to me that we are called upon to make extraordinary or eccentric efforts to insure it, any more than we are to insure a supply of corn or any other staple article of our consumption. In a struggle of seventy years, the Southern States of America have, in a great measure, succeeded in driving all other competitors out of the market, leaving to the rest of the producing countries but a small fraction of our consumption. To save themselves from their overpowering competitors, the tropical countries have betaken themselves to the culture of the sugar-cane and coffee, in the production of which they have the same advantage over the Southern States of America that these have over them in the culture of cotton.

DISCUSSION.

The Chairman said it was now his duty to invite discussion upon Mr. Crawfurd's paper, and if the challenge which that gentleman had so gallantly thrown out was taken up with equal gallantry, he fancied the discussion would not lack interest, because the author had challenged many of the received opinions of those who had large stakes in the cotton trade of this country.

Dr. Riddell referred to the great antiquity of the cotton cultivation in India, and submitted whether any occasion existed for sending out persons from this country to teach the inhabitants the proper mode of culture of a plant the produce of which they had brought to greater perfection by their own particular plan of manipulation than had been attained in this country with its highly perfected machinery and varied means of manufacture. He ridiculed the idea of sending out complicated machinery, such as the saw cotton gin of America, to be used by the untutored Hindoo, who, even if a machine of the most simple construction became out of order, would be totally unable to repair it. He next referred to the characters of soil and climate most favourable to the cultivation of cotton of such a quality as would meet with a sale amongst the manufacturers of Manchester, and contended that India was able to produce good cotton capable of being worked up in Manchester, if they had the proper machinery to work it; but at present they had not got it. They had only got machinery suitable for certain kinds of cotton, and therefore the great bulk of Indian cotton which had been brought into this country was again exported, if the manufacturers had a good supply of the American commodity in the market. He submitted that action should be taken in this country—not in sending out persons to teach the Hindoos how to manage the cultivation of cotton, but to convince the ryots that it was really to their interest to cultivate it, and to show them that they could do so with the certainty of a fair rate of remuneration for their production. If that were done he would answer for it they would be able to obtain very large supplies of useful cotton from India.

Dr. Forbes Watson said the paper, to which he had listened with great interest, was unquestionably one of considerable importance. The chief characteristic of the paper was, that it was opposed to most of the views which had been entertained for a long time past in this country on the subject of cotton supply, and the first portion of the paper had been devoted to a review of the produce of the United States, tending to show that they must not hope for any great supplies of that article from other quarters of the globe, but that we must continue to be mainly dependent upon America. A good deal might be said at the present time to prove that we ought to feel a little uncomfortable in contemplating this complete dependence upon the United States for the staple. But it seemed to him that public opinion had at length settled this question. They knew how difficult it was to move public opinion, but when once it was set in motion it would go on, and no paper read here, after the wheel had began to revolve, would have the effect of stopping those efforts which were about to be made to get a supply of cotton from other countries. There were two remarks in the paper, however, with which he agreed; one was, that an effectual demand would immediately produce an effectual supply; the other was, that they wanted no "eccentric efforts" to procure a supply of cotton. He quite agreed with these sentiments, but taken in connection with the context, seeing that Mr. Crawfurd had pointed out certain things, with regard to the impossibility of getting a supply of cotton from other countries—seeing it was assumed, that the efforts about to be made by Manchester and by the government, added to the philanthropic efforts of individuals, seemed to be characterised as "eccentric" efforts, he (Dr. Forbes Watson) could not agree as to the applicability of the term. One remark of Mr. Crawfurd's seemed to be the key to all the mistakes which he thought had been committed in the paper. With regard to Africa, Mr. Crawfurd had remarked—"Cotton fit for the coarse fabrics of the inhabitants may be, and no doubt is, grown in sufficient abundance, but to say that an article fit for our use can be produced in tropical Africa, seems to me no more reasonable than it would be to insist that every country in which the vine grows freely is capable of producing the wines of France and Spain." Now he thought one inquiry to be made was whether that country was producing the kind of cotton which suits the Manchester market. It was the fact that not only African cotton, but Indian cotton also, was admirably adapted for our purposes. The very description of cotton alluded to in the paper was declared to be worth sixpence per pound, which was equal to the price of New Orleans cotton, and an examination of the African cotton showed that in point of length of staple and fineness it was equal to New Orleans cotton. With regard to the capabilities of India as a cotton producing country, he would not follow one by one the arguments that had been brought forward that evening. The whole thing rested upon this—Was India capable of supplying us with good cotton, and producing sufficient profit to the cultivator, at 4d. per lb.? That was the practical question, which involved that of the cost of production, and every evidence went to show that India could furnish cotton at from 1d. to 1½d. and 2d. per lb., and afford a profit to the cultivator. If that were the case, and seeing that in contradistinction to this, American cotton could not be grown at a profit, at even 3½d. per lb., it followed that the country which could grow cotton at 1½d. per lb. would in the end—if they could get the required quantity to supply our wants—send slave produce below the paying point. Mr. Crawfurd had attempted to found an argument on an alleged fall in the price of American cotton. What was the fact? The price of American cotton fell to 4⅝d. per lb. for three or four years, but since then it had been upon the rise; and since the year 1846, they had paid no less than £82,000,000 sterling over and above what it would have cost had the price remained at the figure mentioned. That was what they paid for slavery. The high cost of slave labour had been alluded to, and in that was involved the cost of production, to which he need not further refer. With regard to the quality of Indian cotton, there were gentlemen present who could say how much it had improved during the last few years. Some time ago, he took the opportunity of examining whether it was as short in staple as it was alleged to be. The result of the examination of a great number of samples was, that on an average, he found the

Indian cotton only one-tenth of an inch shorter than New Orleans cotton, whilst it was equal, in this respect if not superior, to the New Orleans samples—and in others equalled many of the fine Sea-island qualities. There was no doubt that facilities for cleaning the cotton had a great deal to do with the question of obtaining a large supply from India. Mr. Crawfurd had spoken in disparagement of the introduction of the cotton gin into India, but he did not appear to be aware of the fact that at present the government factory was unable to turn out a sufficient number of gins to meet the demand of the natives who came with the money in their hands to purchase them; and that a gentleman was deputed to come to this country in order to get a supply manufactured in this country. Their names were entered in a book, and there was quite a rush to get a supply of that implement. The saw gin was essential no doubt for the cleaning of American cotton, though it was not adapted for the cleaning of Indian cotton, but the implement now exhibited (a roller gin) settled the point. Mr. Crawfurd had stated the cleaning of the cotton in India to be a very slow process; and he claimed for the Whitney gin that it had created a revolution in the supply of American cotton. He (Dr. Watson) claimed for Dr. Forbes's gin, now before the meeting, the same prospective merit with regard to Indian cotton. With this machine a boy could clean ninety lbs. of cotton per day, and sixteen of these machines, driven by bullocks, would clean a ton of cotton per day, which was equal to the ordinary day's work of 750 people. It had been stated that in India the natives did not, and would not, grow good cotton; and various other products had been mentioned in the paper, as showing that they preferred giving their attention to such productions as only required a rude system of cultivation. Amongst other articles, opium was mentioned.

Mr. Crawfurd said he had mentioned it as an article of easy production. It was a foreign commodity, but easy of cultivation, and no particular skill was required in the manufacture. Old women and children collected the juice from the poppies in shells, and it was altogether a crude operation.

Dr. Forbes Watson accepted the explanation, but the argument remained the same. The great deterioration of Indian cotton arose during the picking, and if they could get the natives to exercise as much care in the picking of the cotton as they did in collecting the opium from the capsules of the poppies, they would have as clean cotton from India as that which they were now receiving from America. It was a question of giving the natives an interest in producing clean cotton, and if they did that they would get it in abundance. He believed it had been proved that India was capable of supplying not only the quantity but the quality of cotton they required. There were many other points in the paper which he would not now enter upon, but, seeing the number of practical gentlemen around him, he had no doubt his deficiencies would be supplied before the meeting was over.

Mr. Wanklyn said he appeared there as the representative of the Cotton Supply Association, and had been requested to attend on the spur of the moment to collect the facts which he knew would be laid before this large assembly by the gentleman who had introduced this subject. They were aware that cotton was spun into threads which were classified numerically. The cotton they had been in the habit of receiving from India, and the lower qualities from America, were only fit for the coarser numbers of threads. The Indian was spun into from 20's to 40's, the Egyptian from 40's to 50's, and the long staples from 80's upwards. The quality of Indian cotton had been called in question that evening. He was there to give his testimony that India was capable of producing all the classes of cotton which they required for the general manufactures of this country. In 1852, he commenced using Indian cotton, but it was so intermixed with dirt and other foreign substances, that there was an enormous loss upon it, and they could only speak of it as fit for No. 16 thread. Between that period and 1857, the natives had paid more attention both to the cultivation and the picking, and in that year he spun Indian cotton up to No. 24, which was equal to the middling descriptions of American cotton, and showed an improvement in the capabilities of India for producing cotton of nearly 50 per cent. That was in a period of five years, and a few days ago he saw in Manchester Indian cotton up to 40's. They were constantly told that a better quality of cotton did not exist in India. To the great praise of the government, they had sent home a large quantity of goods made by the natives of India, and sent at the same time a quantity of the cotton from which they were made. By the favour of Dr. Forbes Watson, he had examined those articles at the India Board. He unravelled a portion, and found it to consist of a superior kind of cotton to any that had been received in this country. The question might be put to him, why he did not contrive to use that cotton? and that raised the question of supply and demand. In 1857 he was obliged to give up using it, because he could not obtain a sufficient quantity to keep his mills going for more than a few months in the year. The fact was, there was such competition for the superior qualities of Indian cotton, that he could not get enough to keep his machinery going. What they wanted was a steady supply to keep the mills going all the year round, and not to work, as it were, oat-meal one part of the year and wheat-flour another part. He believed it would be found that we had ourselves been guilty of interfering seriously with the law of supply and demand in the United States of America; that was, with respect to the question of slave labour, though it was not a matter of reproach to this country, but one of pride, that we had interfered very largely with the supply of an article produced by slave labour. Another fallacy of Mr. Crawfurd's, in reference to the law of supply and demand, was, that the price of American cotton was considerably higher at the present time than it was at the corresponding period of last year, whilst the increased quantity of machinery in this country had made our requirements 10 per cent. larger, while the supply was 20 per cent. less. By letters he had received from America he learned that the supply from the United States was 20 per cent. less than it was last year, making a total deficiency of 30 per cent., notwithstanding the supposed law that a demand would always produce a corresponding supply. There was one error on the part of Dr. Riddell which he wished to correct. That gentleman was labouring under the impression that the manufacturers of Lancashire intended to send persons out to India, to teach the natives the best modes of cotton cultivation. They had no such intention. Their actual determination was to send persons out to purchase cotton in India, and to devise the best means of putting themselves into direct communication with the natives, and he could bear testimony to the cordial support with which the government, both in this country and in India, had met the Lancashire manufacturers. The association with which he was connected, in conjunction with another association for similar objects, was on the point of sending out a commissioner to India, to ascertain from his personal investigation and inquiry the capabilities of India to produce the quality of cotton they required, and he was happy to say the government had, in the most handsome manner, placed at the service of those associations the valuable assistance of Dr. Forbes: and he trusted in a few months they would be in possession of a report from the government, corroborated by commercial persons as the result of their investigations, and which would be in all respects satisfactory in the great objects they had in view. Mr. Crawfurd had called in question what he (Mr. Wanklyn) considered the very praiseworthy act of the Governor-General, in the minute or order that he had recently issued. In his humble opinion, Lord Canning was entitled to our warmest thanks for that most wise order, and for disregarding the prejudices and traditions of the old

No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
1	United States (Uplands) ...	·9	1·30	1·1
2	,, ,, ...	·9	1·20	1·05
3	,, ,, ...	·9	1·20	1·05
4	,, ,, ...	·7	1·00	·85
5	,, ,, ...	·7	1·00	·85
6	,, ,, ...	1·00	1·20	1·10
7	,, ,, ...	1·00	1·20	1·10
8	,, ,, ...	·9	1·10	1·00
9	,, ,, ...	·9	1·20	1·05
10	,, ,, ...	1·00	1·10	1·05

TWO INCHES DIVIDED INTO TENTHS

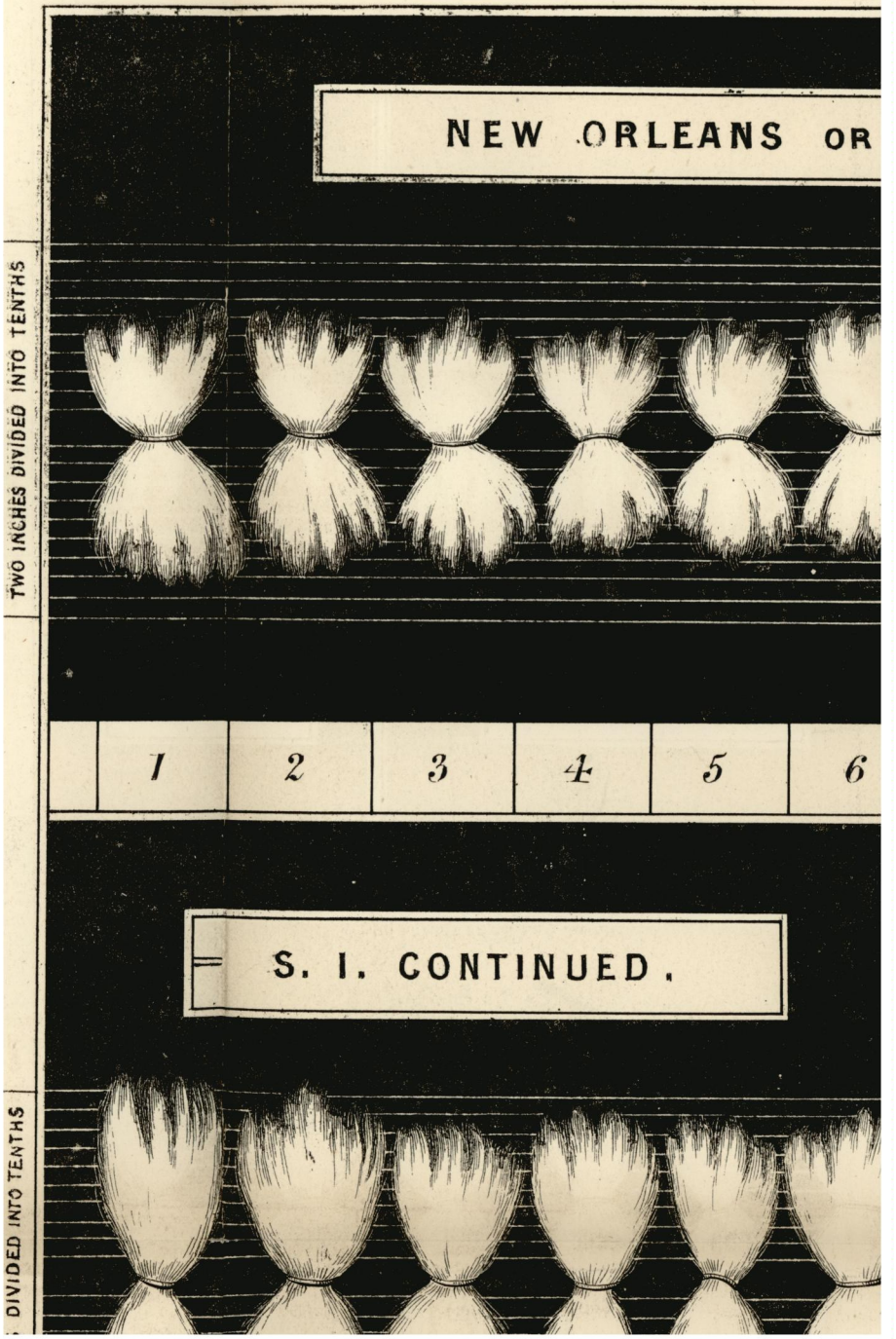
1

No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
21	Hutchinson Island	1·40	1·90	1·65
22	Bull's ,, ...	1·30	1·75	1·53
23	Pinkey ,, ...	1·20	1·60	1·40
24	Bluff ,, ...	1·60	2·00	1·80
25	Cat ,, ...	1·20	1·65	1·43
26	Florida ,, ...	1·30	1·85	·58

DIVIDED INTO TENTHS

COTTON GR

AN


NEW ORLEANS OR
TWO INCHES DIVIDED INTO TENTHS
1
2
3
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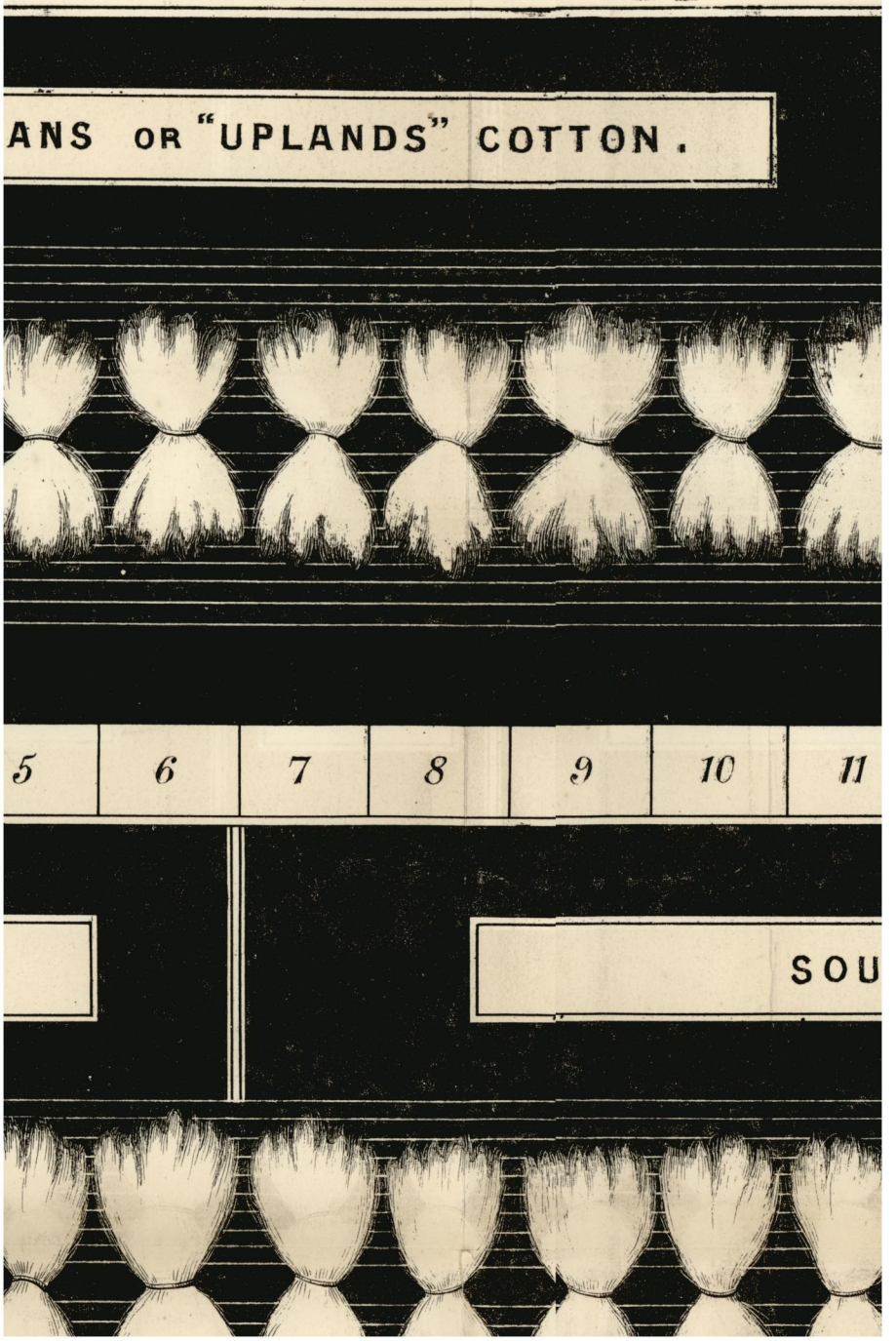
5
6
S. I. CONTINUED.
DIVIDED INTO TENTHS

PLATE

GROWN IN T

AND OTHER PARTS

COMPARATIVE LENGT



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THE UNITED

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LENGTHS OF STAPLE.

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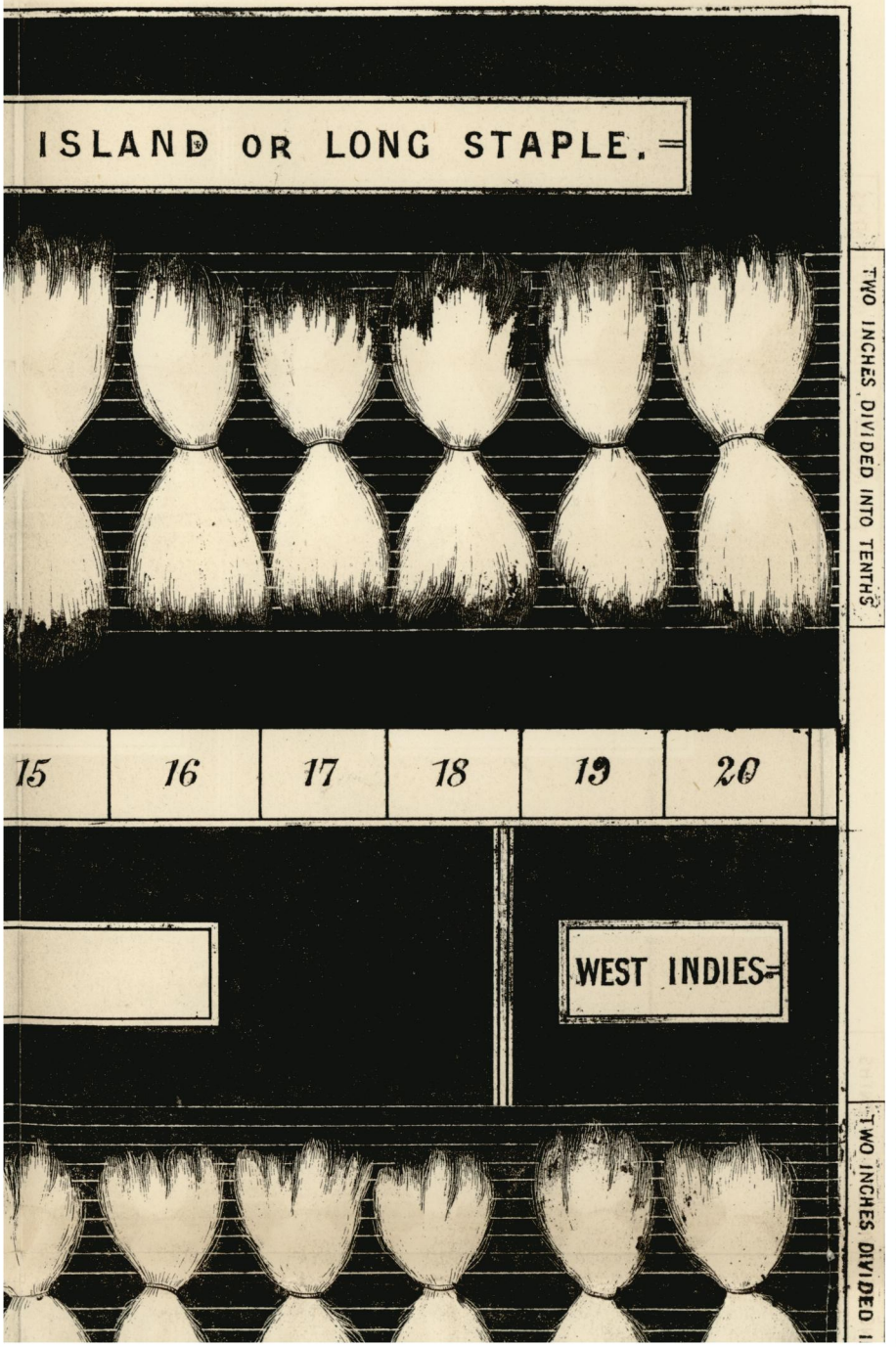
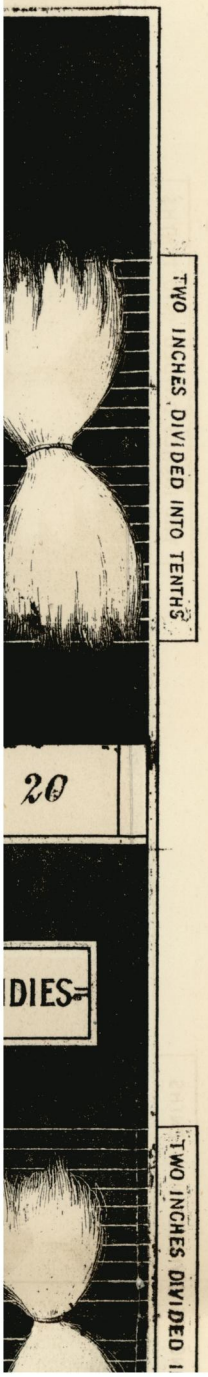

ISLAND OR LONG STAPLE.
15
16
17
18
19
20
WEST INDIES
TWO INCHES DIVIDED INTO TENTHS
TWO INCHES DIVIDED



No.	Place of Growth	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
11	United States (Uplands)...	·90	1·20	1·05
12	„ „ ...	·80	1·20	1·00
13	Sea Island	1·60	1·80	1·70
14	„	1·40	1·70	1·55
15	Edisto Island.....	1·90	2·30	2·20
16	John's „	1·40	1·80	1·60
17	James „	1·45	1·75	1·60
18	St. Helena „	1·55	2·00	1·78
19	Wadamalan „	1·40	1·85	1·63
20	Wassa „	1·45	1·85	1·65

No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
31	Surinam	1·10	1·50	1·30
32	„	·90	1·20	1·05
33	Aracate	1·00	1·30	1·15
34	Maranham	1·00	1·30	1·15
35	„	·90	1·30	1·10
36	Paraiba	1·10	1·30	1·20
37	Ceara	1·00	1·30	1·15

23	Pinkey „	1·20	1·60	1·40
24	Bluff „	1·60	2·00	1·80
25	Cat „	1·20	1·65	1·43
26	Florida „	1·30	1·85	58
27	Pernambuco.....	1·20	1·50	1·35
28	„	1·10	1·40	1·25
29	„	·9	1·30	1·10
30	Peru	1·10	1·50	1·30

TWO INCHES DIVIDED INTO TEN

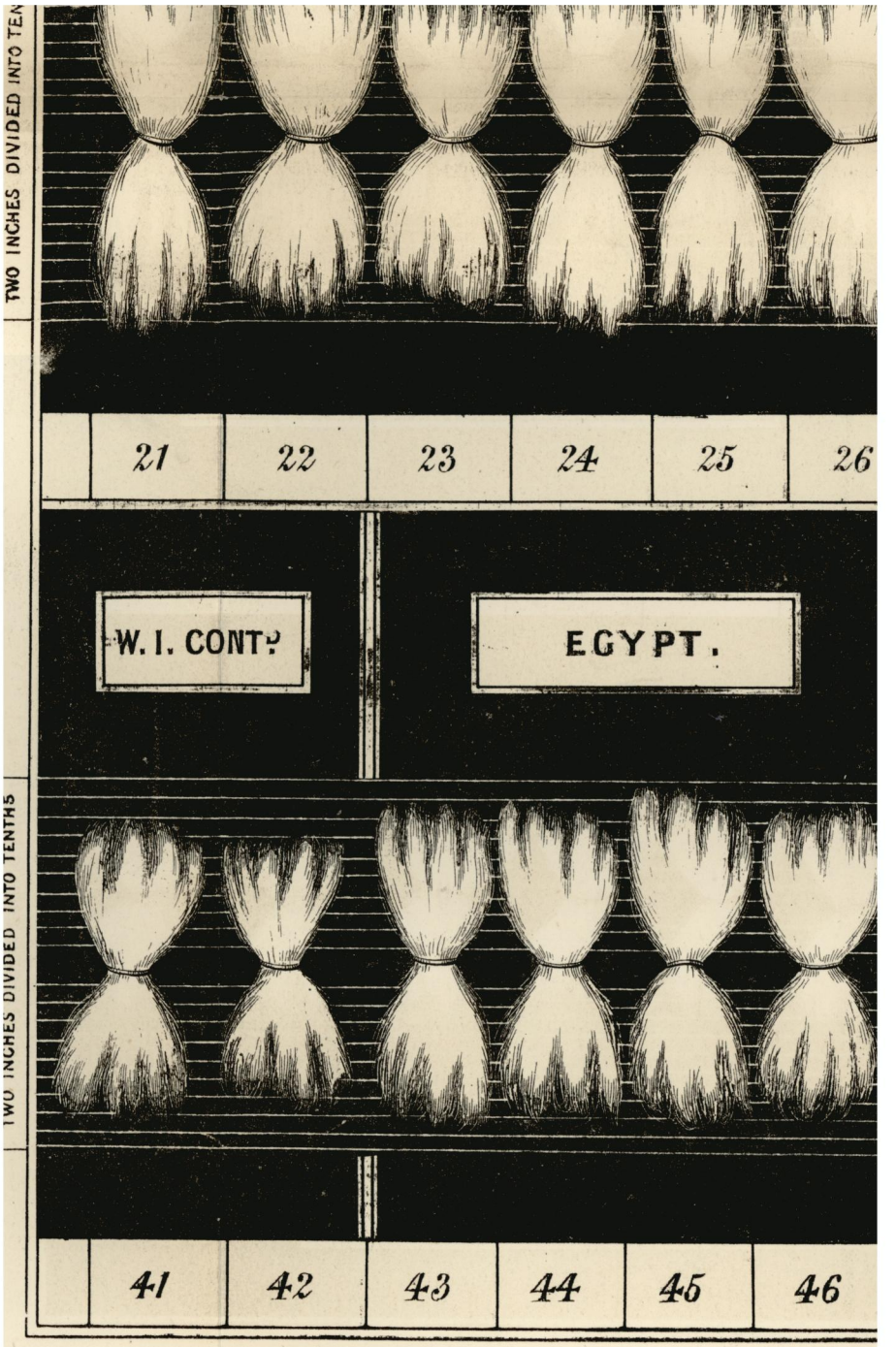
21

No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
41	Carriacou	1·10	1·30	1·20
42	St. Vincent	·90	1·20	1·05
43	Egypt	1·40	1·60	1·50
44	„	1·40	1·60	1·5
45	„	1·20	1·50	1·35
46	„	1·20	1·40	1·30
47	Algiers.....	1·40	1·60	1·50
48	„	1·30	1·50	1·40
49	Lagada.....	1·10	1·20	1·15
50	Shire Valley	1·00	1·30	1·15

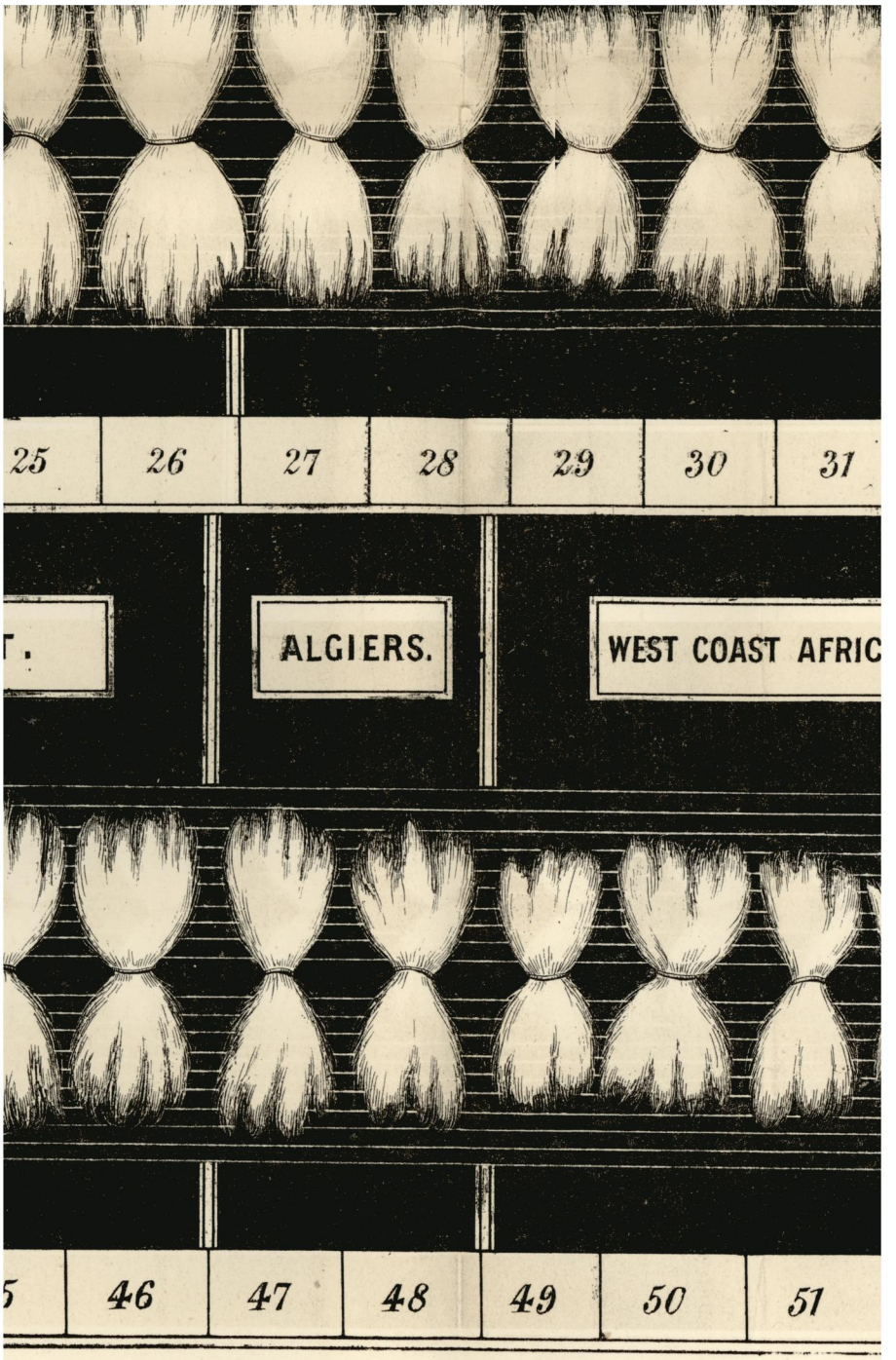
TWO INCHES DIVIDED INTO TENTHS

W. I.

41

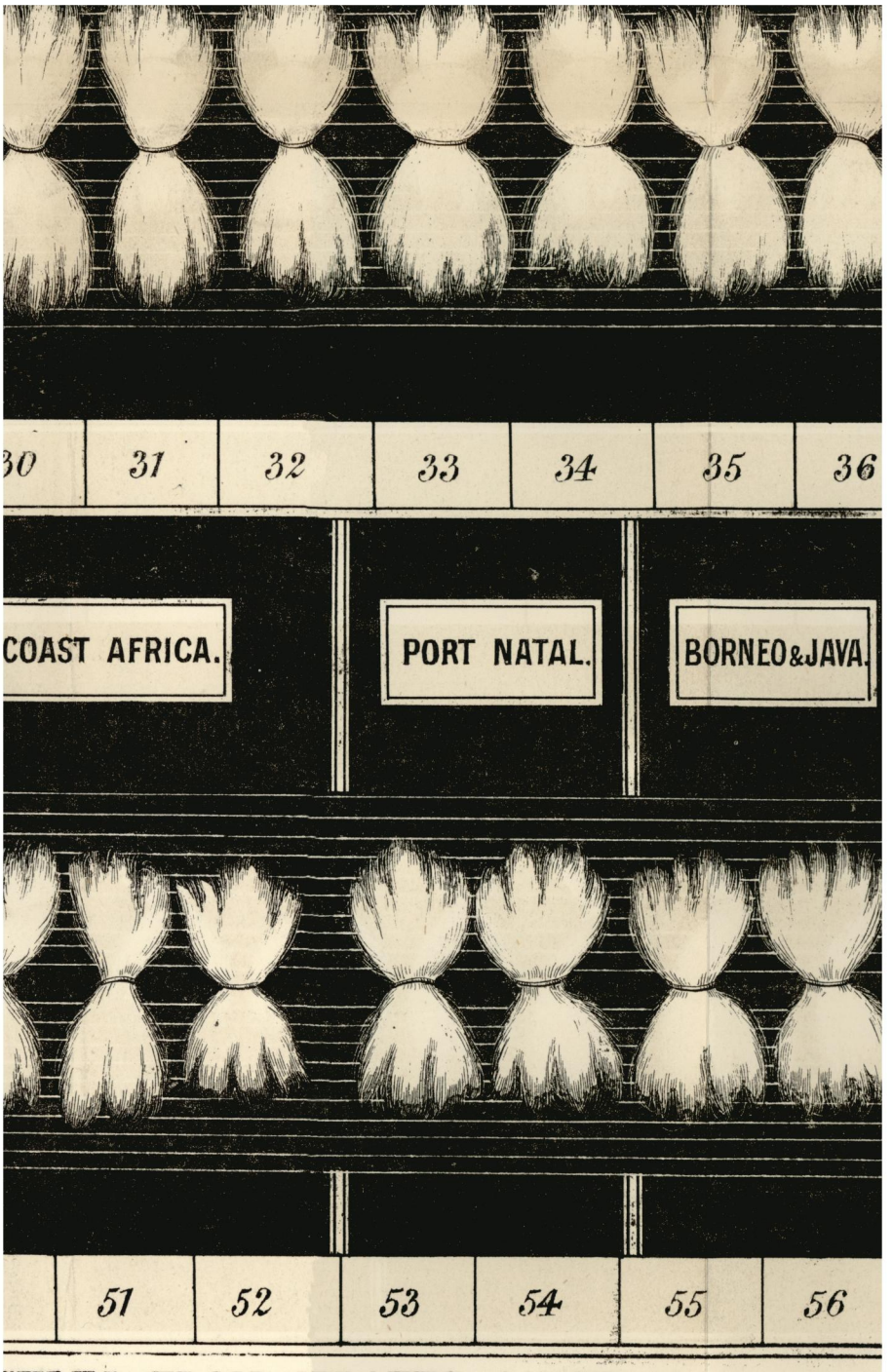


Place of Growth.	
India	
United States	
Sea Islands	
S. America	
Egypt	



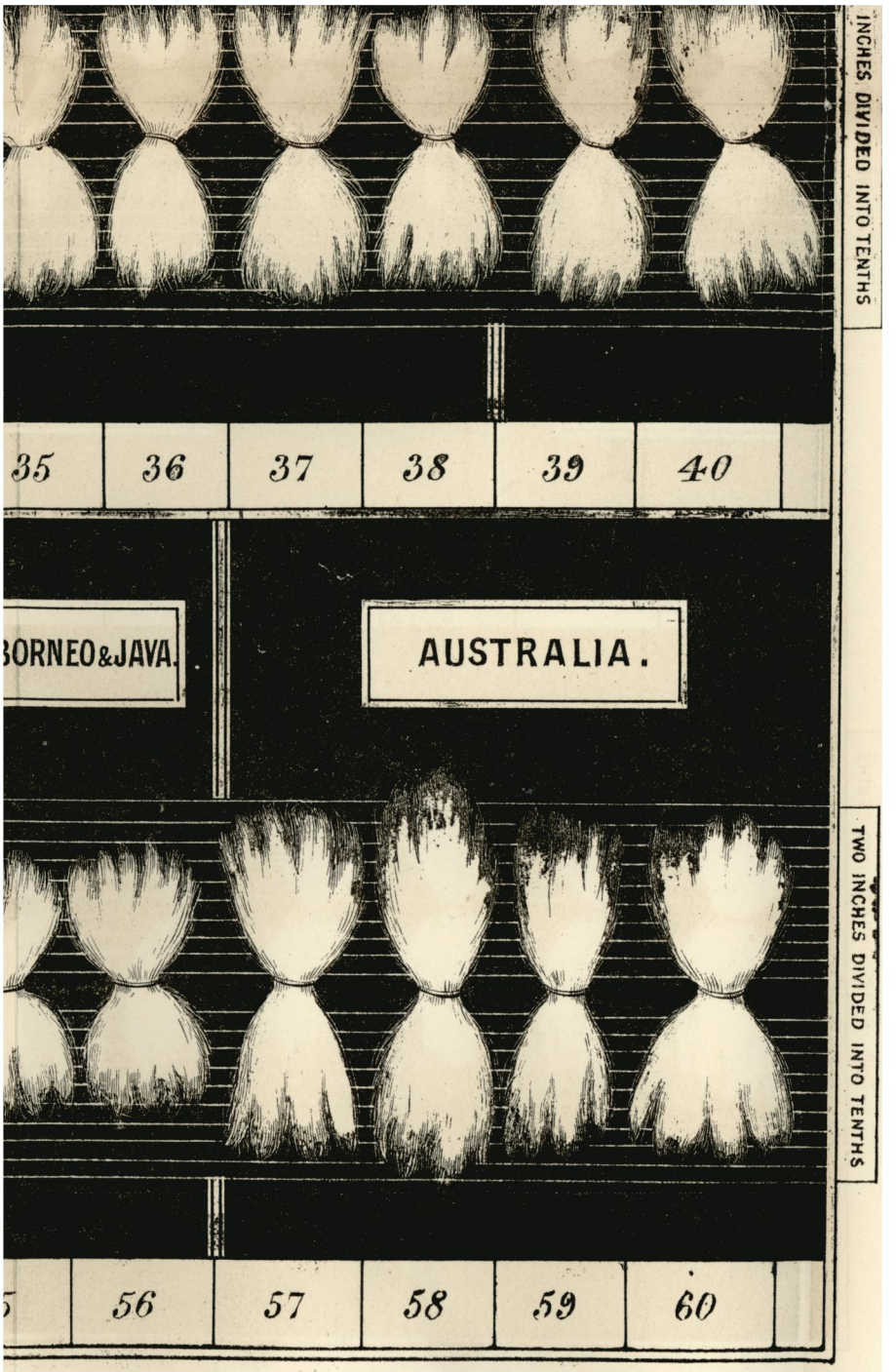
SUMMARY OF THE RESULTS FR

Place of Growth.	Description of Cotton.	Length of Staple. Min.	Max.	Me
		Inches and decimals.		In
.....	Indigenous or Native.....	·77	1·02	·89
	Exotic or American	·95	1·21	1·08
	Sea Island and Egyptian	1·36	1·65	1·50
States	N. Orleans or Uplands	·88	1·16	1·02
ands	Long-stapled	1·41	1·80	1·61
erica	Brazilian.....	1·03	1·31	1·17
.....	Egyptian.....	1·30	1·52	1·41



SULTS FROM PLATES I. AND II.

Length of Staple.			Diameter of individual Fibres or Filaments.			
Max.	Mean.		Min.	Max.	Mean.	
nd decimals.		Inches & fractions	In decimals of an inch.			Fractions
1·02	·89	$\frac{89}{100}$	·000649	·001040	·000844	$\frac{1}{118}$
1·21	1·08	$1\frac{2}{25}$	·000654	·000996	·000825	$\frac{1}{121}$
1·65	1·50	$1\frac{1}{2}$	·000596	·000864	·000730	$\frac{1}{136}$
1·16	1·02	$1\frac{1}{50}$	·000580	·000970	·000775	$\frac{1}{129}$
1·80	1·61	$1\frac{61}{100}$	·000460	·000820	·000640	$\frac{1}{156}$
1·31	1·17	$1\frac{17}{100}$	·000620	·000960	·000790	$\frac{1}{126}$
1·52	1·41	$1\frac{41}{100}$	·000590	·000720	·000655	$\frac{1}{152}$



es or Filaments.	
Mean.	
	Fractions of inch.
000844	$\frac{1}{1185}$
000825	$\frac{1}{1212}$
000730	$\frac{1}{1369}$
000775	$\frac{1}{1290}$
000640	$\frac{1}{1562}$
000790	$\frac{1}{1265}$
000655	$\frac{1}{1526}$

J Forbes Wa

Reporter on the Produ

India Office Ju

33	Aracate	1·00	1·30	1·15
34	Maranham	1·00	1·30	1·15
35	„	·90	1·30	1·10
36	Paraiba	1·10	1·30	1·20
37	Ceara	1·00	1·30	1·15
38	Maceo	1·10	1·30	1·20
39	Union Island	1·30	1·60	1·45
40	St. Kitt's Island	1·20	1·40	1·30

No.	Place of Growth.	Length of Staple.		
		Min.	Max.	Mean.
		Inches and Decimals.		
51	Loanda	·90	1·20	1·05
52	Lagos	·80	1·00	·90
53	Port Natal	1·00	1·20	1·10
54	„	·90	1·20	1·05
55	Sarawak	1·10	1·30	1·20
56	Java (N. Orleans Seed) ...	1·00	1·20	1·10
57	Australia	1·50	1·80	1·6
58	„	1·60	2·00	1·80
59	„ Moreton Bay	1·40	1·60	1·50
60	„ „ ...	1·30	1·70	1·50

orbes Watson;

the Products of India;

Office July 1860.

DAY & SON, LITHRS TO THE QUEEN

India Board, which had for so long a time frittered away the vast resources of that country. In conclusion, he would say, the difference between India and the United States in respect of the growth of cotton, was this:—In the one country they had Anglo-Saxon energy, Anglo-Saxon means, and everything else pertaining to the Anglo-Saxon race, except slave labour. In India they had a vast supply of labour, but the Anglo-Saxon energy was wanting. Let them throw open that vast country, place the cultivators of India in the same position as the cultivators of the United States, and in a very short time England would be independent of a country, which was at present blackened by slavery, for the chief supply of one of the most important staples of natural industry.

The Chairman explained, on behalf of Dr. Riddell, in reply to Dr. Forbes Watson, that what he intended to say was, that in the present state of intelligence of the natives of India, they were incapable of managing cotton gins of even the most simple construction.

Sir Thomas Phillips was reluctant to intrude amidst the practical statements they had heard, from gentlemen so well acquainted with the subject, brought before them that evening, but he rose to express the regret he should feel if this paper, coming from a gentleman whose opinion was entitled to respect, should have the effect of discouraging the efforts which were now being made in this country to increase the growth of cotton in India—a country in which we were so deeply interested, and for which we had made such large sacrifices. He did not deny that we might have miscarried grievously during some portions of our rule; but he trusted we were now more alive to the duties that were entailed upon us as the rulers of one of the largest communities in the world, and it was our duty to step aside from the cut-and-dried formulas of opinion with regard to supply and demand, in order to stimulate the production of a commodity of so much importance to the commerce and well-being of this country. If it were certain that America would continue to produce, year after year, the quantity of cotton which we had taken of them of late years, even then, he contended, the necessity and duty existed of looking to some other country for a large additional supply. They must consider the enormous growth of the manufacture itself, and the necessity that would arise for providing for larger quantities than America supplied, if even she continued to keep up the supply equal to what we had hitherto received. So late as the year 1820, the cotton imported from America was only 150 millions of lbs., whilst in 1859 it amounted to 1,200 millions of lbs.; the importation of cotton had therefore increased eight-fold in that period. Then let them take the export of cotton fabrics. Those of 1820 amounted to £16,000,000 sterling; in 1840 they had increased to £24,000,000, showing an increase of £8,000,000 in twenty years, but between 1840 and 1859 they had doubled, the increase being £24,000,000 as compared with £8,000,000 in the preceding period of the same length. He dealt with these figures to show the largely-augmented demand for cotton, and the necessity, apart from the present condition of America, for ensuring to our manufacturers a supply of that which was as great a necessity as food; for it was as important to supply the working classes with the means of continuing their work, as to supply them with the means of obtaining food. But it might be asked, how did he look forward to any large or important supply of cotton from India? India had already exported large quantities, and here he would allude to the paper read last session, by Dr. Forbes Watson, on the fibrous plants of India, which was the most valuable history of the textile materials of India he had ever met with; and it was from a reference to that work that he found that the annual exports of cotton from India averaged 240,000,000 lbs. from 1851 to 1858; that in one year alone, we received from that country 319,000,000 lbs., which was double the entire importation of cotton into England, from all parts of the world, not more than forty years ago. Let them regard the fact that India had exported double the quantity of cotton which we required forty years ago, and could they then have any doubt as to the future capabilities of that country in this respect? He was therefore surprised at the conclusions at which his friend Mr. Crawfurd had arrived at the end of his paper. It seemed to him that Mr. Crawfurd had collected materials showing that all that was wanted to make India a great cotton-producing country, was European capital and energy, better cultivation of the soil, and improved means for preparing the article for the market. He was thankful to Mr. Crawfurd for presenting a paper which contained many statements well worthy of consideration, although opposed to popular opinions upon some points. The paper was a valuable one, as containing facts arising from his own personal knowledge and experience; valuable, also, because it had elicited opinions of a contrary nature. The value of these meetings consisted, to a great extent, in the discussions which the papers gave rise to, for by such means it might be hoped that truth would be arrived at.

Mr. William Hawes remarked that the general characteristic of the paper was, that they must rely upon America for their supply of cotton, and take no pains to provide for it elsewhere. That was the tone that pervaded the paper throughout. They were told that they must rely upon the supply of cotton from those who employed slave labour, and neglect those other parts of the world where negro labour was equally available, but without the condition of slavery. In this respect, the eastern coast of Africa was particularly deserving of their attention, inasmuch as by the introduction of European capital and enterprise, that quarter of the globe could produce a large supply of cotton, not enough for our wants, but an annually increasing quantity to assist in the general supply which this country required. They had been told in the paper that the cotton of Africa was scarcely worthy of notice. That might be true at the present time, but that did not make it a country which ought to be neglected, as had been argued that evening. There was, in the dominions of the Imaum of Muscat, a large extent of country adapted for the cultivation of cotton. The plant was indigenous to the country, and there was an ample supply of labour which only wanted direction. Let them send capital and machinery there, and they would soon have an increased supply of cotton in return. But according to the argument of Mr. Crawfurd, they were to neglect those great districts, which nature appeared to have marked out, in favour of America, which had been supplied with a large amount of labour, enterprise, and capital from this country, without which the Southern States of America would have been in the same condition as India was at the present day.

Mr. P. L. Simmonds said he had followed closely, and with some attention, the observations of Mr. Crawfurd, and while giving him due credit for the great research evinced in the wide field of inquiry over which his observations extended, and for the boldness of the opinions advanced, he must, in common with most of the preceding speakers, differ entirely from those opinions. He (Mr. Simmonds) would confine his remarks to but one or two points, in order to leave the field of discussion open to other speakers, of whom he saw many present thoroughly competent to reply. Mr. Crawfurd complained that, while European capital, skill, and enterprise had been turned to the production of sugar, indigo, coffee, and other staples in India, little or no attention had been given to cotton, which was there one of subordinate consideration as regarded quality and husbandry, and he also cited the instances of silk, stick-lac, and other products. Now the argument, as far as regarded some of these, scarcely held good. In stick-lac there was no culture; it was a spontaneous product of the forests, and the productive manufacture of the resin and dye had long been practised in India. Sugar was also alluded to, but the inferior sugar formerly made was, in fact, the jaggery, or goor, from the date, palmyra, and other palms, which, while

adapted for local use, was unsuited for export to European markets. That made now was produced from the cane. The Hindoos were intelligent and apt pupils enough, and capable of producing anything for which they were adequately paid. But to return to the staple more immediately under discussion—cotton and its supply, a subject which had frequently been discussed before the Society, and investigated in almost all its aspects, from the culture in the United States, as detailed by his friend Mr. Leonard Wray; by Dr. Forbes Watson, and Mr. J. B. Smith, M.P., on production in India; by Mr. Ashworth, on the cotton manufacture, and others. Now there was a strange discrepancy in the remarks of Mr. Crawfurd as regarded cotton culture in the West Indies. After stating that seventy years ago our West Indian colonies, insular and continental, furnished us with our chief supply of cotton, and that now we received but a very small quantity from thence, he inferred the unsuitableness of the West Indian islands generally for the production of cotton, because the cane had superseded it; and he further cited Bryan Edwards as an authority for the precariousness of the crop. Now while he bore willing testimony to the value of Edwards's excellent history of the West Indies, Edwards was better known as a historian than as a planter. From his own personal experience of three or four years in Jamaica, he (Mr. Simmonds) could only say that there were large districts of that fine island admirably suited to the cultivation of cotton, which could grow it, and had grown it, successfully, whether as regarded soil or climate. But the question of labour in this as in other crops stood in the way. Sugar cultivation, too, paid much better, and was more in demand until of late years, and hence the efforts to grow cotton were given up, as they had been in British Guiana. Capital had been invested in expensive machinery and plant for sugar-making, and this could not well be sacrificed. Then, with regard to the production of cotton in Western and Central Africa, it was by no means so delusive a field as Mr. Crawfurd would lead them to believe. Listening to his arguments, the opinion would be held that cotton was a most difficult cultivation. Now it was perhaps one of the most simple of all tropical productions, if planted in favourable soil, at the proper seasons, and kept free from weeds. It required, indeed, no culture at all in many localities, although, no doubt, it improved much under proper management and with occasional change of seed. There was a good deal of cotton to be obtained even now from parts of Africa; but he heard only a day or two ago, from a well-informed African merchant, that the shipment of cotton from the coast was discouraged because it was a bulky article as regarded freight, difficult to ship on most parts of the coast, and far less remunerative than dye woods, ivory, and palm oil. If, as Mr. Crawfurd had admitted, palm oil had done so much to stop the slave trade, why should not the extended production of cotton be equally beneficial, both on the east and west coasts. Instead of dealing in slaves, as was now so largely done at Zanzibar, the Imaum might direct his attention to cotton. From what he knew of Mr. Crawfurd, and the pleasure he took in provoking animated discussions in the various learned societies in which he took so active a part, he had no doubt that the paper just read was penned with the best intentions. So far from really disparaging new fields of cotton supply, and discouraging the efforts being made to extend its growth, so that it might keep pace with the increasing wants of commerce, the object no doubt was to court inquiry, to stimulate reply, and to elicit the opinions of those competent to speak on the matter by the friendly gauntlet which had been thrown down. While he differed from Mr. Crawfurd as to the probability of the Arracan and Burmese alluvial coasts being favourable for extended cotton culture, whether as regarded soil or climate, and more especially with rice as an alternate crop, he perfectly agreed as to the suitability of parts of Queensland for the growth of cotton. So far, however, from our knowing little of its capabilities for this special object, it had many years ago been brought under the notice of the Manchester manufacturers by an intelligent and zealous colonist, Dr. Lang, who had produced beautiful specimens of cotton. That gentleman had published several works here, and tried over and over again to form a cotton company. His patriotic labours had lately been recognized by the legislature in Australia, and under the management of the present governor, Queensland (better known under its old name of Moreton Bay) might, if adequate labour were obtained, go in successfully for cotton culture in conjunction with its main staple, wool. No extraordinary efforts were called for to promote cotton culture anywhere, yet much good might arise hereafter to our great manufacturing interests, if attention were now and then drawn to those parts of the British possessions that are suited to the production of cotton, and it was shown that there was always a market here for the staple at remunerative prices.

Mr. THOMAS BAZLEY, M.P., speaking of the importance of the subject of cotton supply, said he knew of nothing more saddening than the contemplation of the possibility of a great community being able and willing to work, but not having the material wherewith to employ their industry. The excellent paper of his friend Mr. Crawfurd was replete with valuable information, and his general conditions he agreed with, but his gloomy conclusions he dissented from. There was no doubt that India was capable of growing a very excellent quality of cotton, such as would supply the markets, not only of Lancashire, but of the world; and Dr. Riddell had not done himself justice in his remarks that evening, because some years ago he brought into Manchester specimens of cotton from India, which if grown in large quantities, he (Mr. Bazley) did not hesitate to say, would supersede to a great extent the supply from New Orleans and the Southern States of America. He had had under his inspection cotton of beautiful quality, grown in the East Indies. But there were serious difficulties connected with the extension of the cultivation of cotton in India. At the present time cotton, which was worth three-halfpence per lb. in India, cost threepence per lb. to bring it to Liverpool, being 200 per cent. upon the cost. Cotton, for which the ryots obtained 2d. per lb., was now offering in Liverpool at 6½d., the charges for carriage, &c., having added 200 per cent. to the price paid to the cultivator. As an importer of cotton from the United States, he could tell them from his own knowledge, the average cost of bringing the cotton from the plantations to the market of Liverpool did not exceed 12½ per cent., therefore the planter received the maximum portion of the price paid for the cotton; and the large price he obtained was the great stimulus to exertion in the production of the commodity; and until we could give a similar stimulus to the Indian cultivator, we should continue to be deprived of cotton, which otherwise, he believed, would be produced in very large quantities. Africa was capable of producing beautiful cotton. The palm oil trade, to which allusion had been made, was a proof of the energy possessed by the negro race. This trade had sprung up within the last thirty years, being created in a great measure by the large demand for that article for lubricating purposes on the railways. He knew no reason why they should not have as good cotton from Africa as they had from America. It was only about three-quarters of a century since they received the first supply of cotton from the United States, and seven years since they received the first cotton from Africa; and he had great pleasure in stating that the quantity had been annually increasing; therefore there was every cause for hope and encouragement. The extent of British territory capable of producing cotton was so vast that it was a disgrace, and a wonder at the same time, that we had so small a supply from our British possessions. He would particularly call attention to Queensland. The cotton of that district was of exquisite fineness and beautiful quality, and from information he had received as to the cost of production, and the capabilities of the soil, it was his

deliberate conviction that nothing was so profitable on the face of the earth as cotton cultivation would be in Australia at the present prices. He had been told that that soil was capable of producing 600 lbs. of cotton per acre; and although he had paid from 19d. to 2s. per lb. for Australian cotton, he presumed the price in the English market would average about 16d. 600 lbs., at 16d. per lb., would yield £40 per acre. In the United States, one negro had charge of ten acres of ground; therefore, the cultivator in Australia would have an aggregate return of £400 from the labour of one able-bodied labourer, whether Chinese, negro, or Hindoo. Of course women and children would be employed in the picking season, and, therefore, gold-gathering at the present time was not so profitable as cotton-cultivation would be in that colony. He viewed with disquietude the prospects of America. They had hitherto been designated as the United States. They might now speak of them as the disunited States. Hitherto the Southern States had received their great supplies of food from the Northern States, but in the state of things to be anticipated, the South would be obliged to raise food for itself; and a large portion of land, now cultivated with cotton, would have to be appropriated to the cultivation of food. He thought there was great doubt whether the negro would continue to be depressed under the system which at present prevailed; but the price of labour in the Southern States of America was an important item in the consideration of this question. The price of a negro was about £350 before the present political convulsion took place. They could not estimate the interest of money-compensation, and deterioration of the life of the man, and his possible death, at less than 15 per cent.; that would amount to £50 per annum. Then the man must be fed and clothed; and altogether he believed the best negro hands cost the proprietors at least 30s. per week previous to the outbreak in the States, and yet they upheld a system of cultivation in the Southern States which imposed the utmost degradation upon human nature, at a price as regarded the cost of labour beyond what the civilised workman in Europe was obtaining as his wages. He believed, by a little attention being directed to this subject, great efforts would be made to emancipate the industry of the South from the degradation to which it had been so long subjected. They never had the fact before them that sugar, the produce of free labour, was obtained of good quality from India. Thus they saw that India could and would supply all those articles which we so much required. He hoped the present assembly would continue to pay attention to this subject, and that the capital, intelligence, and energy of the country would be employed in this great matter, both in India and our other possessions.

Mr. John Jones asked whether Mr. Crawfurd could give them any information as to the prospects of the cotton manufacture in India. That country had from time immemorial been celebrated as the repository of the best cotton manufactures in the world, and notwithstanding the great perfection to which the machinery of the cotton mills in this country had been brought, the manufactures of India were still superior to those of England. He should be glad to be informed whether it was likely that the mills erected in Bombay, and which were said to be paying a profit of 10 or 15 per cent., would interfere with those of Lancashire. It occurred to him that a country which yielded enough cotton for the clothing of 150,000,000 of people, each person using about 4 lbs. per annum, making a total quantity of 600,000,000 lbs.—it occurred to him, that if mill labour were entered upon to any great extent in that country, with labour at 2d. or 3d. per day, it would have a material effect upon the home trade with India in manufactured goods. With all our superiority of machinery, we had never been able to produce anything equal to the Dacca muslins. It was a question which the Lancashire people would do well to think about, as to how far there was a probability of Indian manufactures coming into the market in competition with the goods from the Lancashire mills. They might reasonably suppose that when the Indian manufacturers had a taste of the large profits made by the gentlemen of Lancashire, they would be anxious to participate in them.

Mr. David Chadwick rose to suggest the adjournment of the discussion, as there were many present who were desirous of expressing their opinions. He did not share in the compliments that had been paid by Mr. Bazley to the author of this paper, as he (Mr. Chadwick) considered it was a collection of misconceptions and mistakes, and he thought an opportunity should be afforded of removing the impressions which the publication of the paper would tend to convey.

Mr. Henry Ashworth, as a cotton manufacturer, wished to acknowledge the obligations they were under to this Society for having from time to time raised the question of cotton and cotton supply, and for the discussions, which he believed had been profitable in this part of the country as well as in Lancashire. He would say, as regarded the question asked by a previous speaker (Mr. Jones), so far as the manufacture of Dacca muslin was concerned, it was impossible for an English manufacturer to give any answer whatever; but in speaking of the erection of mills, and the manufacturing processes recently introduced into India, he could only say the establishment of those mills had been the offspring of the protective policy of the Indian government. The present government had increased the tariff upon the introduction of manufactured cottons, and by reason of that increase of tariff, the difference in price between cotton manufactured on the spot, and that brought to Manchester and returned to India as manufactured goods, amounted to something like 25 per cent., with 25 per cent. profit beyond that which the British manufacturers obtained. They, it appeared, were enabled to make a division of profit equal to 15 per cent. From such a disclosure, which he believed to be correct, it would be understood, that, were Indian goods unprotected, they would cease to be manufacturers, or rather it was more probable that they would never have begun to be manufacturers; and it was by reason of the protection afforded to these mills that joint-stock companies had been brought into operation, and from one to two millions sterling of capital subscribed within the last two years to compete with the English manufacture. Had the Governor of India been a free trader, and not a protectionist, he would have employed a customs officer in every mill to measure the yards of cloth produced, and have taxed them to the same extent as he would tax the cloth shipped from England. If protection meant anything, it meant favouritism, and if Indian manufacturers were not specially intended to receive favour, then customs officers would be placed in the mills in the same impartial manner as they were placed in the ports of reception. This explanation would account for the profit of 15 per cent. being realised by Indian manufacturers who had 25 per cent. of margin to go upon. Upon the subject of cotton growth and future supply, he acknowledged the paper was full of valuable information, and in most respects but little wide of the mark. Mr. Crawfurd had spoken of seven countries as producing cotton, and had stated that the production of the United States constituted 78 per cent. of the cotton consumed in this country, whilst of the remaining 22 per cent. India furnished the largest portion. It would be a great mistake to suppose that the large portion which had been alluded to as coming from India was available to the manufacturers of this country to the extent the quantity implied. Referring to the imports of last year, he found they received from India 560,000 bales of cotton, but so large a portion of that amount was mere rubbish, that only 173,000 bales had been used in this country, and they had exported more than twice as much as they consumed. The reply which would suggest itself upon that statement was—had the cotton been equal to our wants in regard to quality it would not of necessity have been exported, but would, very probably, have been consumed at home.

However, if we were to have a larger supply of cotton from our possessions in India, as had already been announced, it would be unavailing altogether to promote the growth and importation of cotton from that quarter, unless it were of a quality that we could consume. We had the evidence of Dr. Forbes Watson and others, to the effect that India could grow good cotton, and could produce it of almost every quality we required. But the secret of production did not consist altogether in the extent of country which possessed a soil and climate suitable for the growth of cotton; the three great elements of enterprise, intelligence, and capital were still more requisite, and those elements, when placed under proper regulations, would command both the quality and the quantity of cotton we required. If they carried the investigation of these things a little further, they would conclude that since India was so well supplied with soil and climate, if it possessed the three elements, viz., enterprise, intelligence, and capital, it could not fail to produce an abundant supply. There was no doubt that there was capital, both in India and in England, ready to flow in that direction; but as this did not happen, there must be some obstacle in the way. If there were any such obstacle, let it be discovered and remedied. We had large capitals employed in our Indian possessions in the cultivation of sugar, indigo, lac dyes, and other articles, the production of which had not only increased in quantity, but improved in quality, under European management, whilst cotton was the only staple article of India which had not been improved in quality, and which had not received that attention from capitalists which other articles had received. Sometimes they had heard it stated that it was the business of the master manufacturer to encourage the growth of cotton. There might be some men in Manchester who held that opinion, but the larger number, he believed, held the view that the growth of cotton was a distinct pursuit, and in no way connected with the manufacture of it. He could only say, that, as manufacturers, they were ready to produce any article which the world required in the shape of cotton clothing; but he thought it was too much to ask them to produce the cotton as well as to spin and weave it. In times of scarcity of corn, they had never heard of remonstrances with the millers that they did not grow enough wheat, and he considered that they, as manufacturers, were not responsible for any deficiency in the growth of cotton. They were willing to buy it at its fair value from any market in the world, and they asked no questions as to whether it was slave-grown or not. There were many other points of interest in this subject, but the time was passing away, and he hoped that on some other occasion during the present session the question would be revived, in order that more attention might be given to it, for he thought there was nothing in this country of half the importance of the cotton question and our Indian government. These two subjects were closely united, and he did not see how they could be separated. He spoke of this subject with delicacy, because it might involve a political question in relation to our Indian government. At the same time, it was to be remarked, as an unaccountable feature, that whenever an enterprise was projected in any part of the world, however remote, the money-finders were to be had in this country, and they saw these people taking shares with avidity in all manner of concerns in every part of the world. How did it happen, then, that they were so chary about investing their property in India? There was some mystery in that question which had the effect of hindering, not only the employment of European energy and enterprise, but European money also; and until that state of things was remedied, they might look in vain for any large quantity of cotton, or any great improvement in the quality of the supply from India.

Mr. Remington said they had been addressed by the theorist, by the distinguished man of science, and by the practical man and manufacturer. He appeared before them as a merchant of 17 years' standing in Bombay, and therefore ventured to make a few remarks upon the broad question which had been raised that evening. He differed almost *in toto* from some of the assertions that had been made. In the first place, he did not think it had been established that there was any general scarcity in the supply of cotton to the world. Six months had scarcely elapsed since they had the most unprecedented stock of cotton ever known in this country, but owing to the drought in America they were likely now to experience some scarcity in that article. With regard to India, it could produce all the cotton they could consume, if they would only buy it. The fault was with Manchester itself, as the manufacturers would only buy Indian cotton when there was no American cotton to be had. Indian cotton was 3d. per lb. below the price of American, and the quality was quite equal to the middling Orleans. The great hindrance to the export of Indian cotton hitherto had been the difficulty of conveyance. The consumption of cotton from that country averaged in former years 7,000 bales per week; at the present time it fell below 3,000 bales. Why was that? Because the preference was given by the manufacturers to American cotton. The supply was on the increase, but there was not a demand for it. If Indian cotton could be used with advantage, why was it not used? It was not sent to market dirty now. It was of beautiful quality, and he believed the growth could not be materially improved. It was dependent for the character of its growth upon the peculiarity of the soil. In India, useful descriptions of cotton could be produced, and in certain districts cotton of a very fine description. It was said that the Anglo-Saxon residents in India did not exert their enterprise there. He would say they were constantly endeavouring to do so under the old East India Company, who spent large sums of money in experiments upon cotton, and did all they could, save perhaps in the matter of roads; but in the great cotton producing district of Goojerat, the roads, if not all that could be desired, were such that the cotton could be brought down at a small expense. He differed from Dr. Forbes Watson as to the price that should be paid for the cotton. His (Mr. Remington's) opinion was, that with a less price than 5d. per lb. in Liverpool, it would be impossible to increase the growth of cotton in India.

The Chairman said he must now bring the discussion to a close by asking the meeting to pass a cordial vote of thanks to Mr. Crawfurd for his paper. Although all who had addressed them that evening differed more or less from that gentleman's views, he thought no one present would refuse to acknowledge the great critical acumen which was the characteristic of the paper, nor hesitate to recognise the sagacity which had been displayed in the investigation of topics of such deep interest as those which had just engaged their attention. It should be remembered that there had been persons who upon the starting of any new and great idea had shown themselves as critical and sceptical as Mr. Crawfurd might have been thought to be in his paper. He need only refer to the introduction of the locomotive engine by George Stephenson. In those days there were not wanting men of the highest standing as engineers who asserted that the locomotive could never be made to move upon rails, and who laid it down as a most positive certainty that it could never be made to drag a weight. He remembered, at even a still later period, a statement made by Dr. Dionysius Lardner, before the British Association, that a steam-boat could never be made to cross the Atlantic. His friend, Mr. Crawfurd, would therefore permit him to class his paper with the statement of Dr. Lardner. He seemed to have proved to his own satisfaction, though not to the satisfaction of those present, that in no other country could cotton be grown so well as in America; but he could nevertheless assure his friend he did not believe that the opinions he had enumerated would have the effect of checking that spontaneity of impulse which had been induced upon this question amongst the manufacturers of Lancashire, or would deter

them from taking up the enterprise they had in hand with all its risks, inasmuch as they had decided in Lancashire, that they would no longer be dependent upon America for their great supply of cotton. The subject was so extremely important, that he should be very glad if the Society could appropriate another evening to its discussion; but for the present, it was his pleasing duty to move a cordial vote of thanks to Mr. Crawfurd for his valuable paper.

Sir John Pakington, Bart., M.P., rose to second the proposition of the chairman. He had not presumed to take any part in the discussion, because he had attended rather as a listener and learner, but he was glad of the opportunity of seconding this well-merited vote of thanks, as it enabled him to express the deep interest with which he had listened to the paper, and to the discussion upon it, and he confessed it was not with the less interest, from the freedom with which the different opinions upon this subject had been expressed, and the views of Mr. Crawfurd criticised. Every public man must be conscious of the universal importance of this subject at the present moment. This was not the first time he had heard discussions of great interest in that room. For several years past, the attention of the manufacturing interests in Lancashire, and of public men in England, had been directed to the extreme importance of this question of the supply of cotton. The reason why this question had assumed so much interest had been owing to the natural apprehension arising from the state of the slave question in America; but now the evil which had been for some time apprehended had, in some measure, come to pass. The separation of the Northern from the Southern States had taken place. The point about which they as Englishmen ought to feel most anxious, was that that should be accomplished without civil war and without bloodshed. He hoped that might be the case. His belief was strong that the separation would take place; in fact it had taken place, and he believed it would not be revoked. Their anxious wish would be that it should be a peaceful separation. If it were a peaceful separation, he was disposed to think they might anticipate that the supply of cotton to our manufacturers from the Southern States of America would continue for a long time to be large; but he thought it impossible to regard the present state of America without feeling that there was risk and danger in this respect. And therefore the time had arrived when it became more than ever necessary for the great energy of the trade of England to be directed to the question—what were the quarters from whence they might hope with certainty for a supply of cotton. He believed in the great territory of India, there were several quarters from which that supply might come. From what he had heard that evening, there seemed to be little doubt that India alone could afford that supply; but he had reason to hope, by a proper supply of labour from China, they might look with confidence to Queensland. He had lately placed in the hands of his friend, Mr. Bazley, a communication he had received from the governor of that colony, in which he wrote in the most sanguine spirit as to the capabilities of that district if labour were supplied. His object in rising was to express his strong sense of the immense importance of this subject, and the satisfaction with which he had listened to the discussion that evening, because he could not help deriving from it a sanguine hope that there was no danger of the manufactures of this country not being, from some quarter or another, amply supplied with cotton.

The vote of thanks having been unanimously passed,

Mr. Crawfurd, in acknowledging the compliment, said he was the more obliged to the meeting because the majority of the speakers were opponents of his views. He was ready to oppose himself to them again on this question. With regard to the establishment of cotton mills in Bombay, he might state that £2,000,000 of capital had been invested in mills, the machinery for which had been sent out from this country. That was done under a protective duty, imposed under the advice of the late Mr. James Wilson—a most pernicious measure in his (Mr. Crawfurd's) judgment. The people of India, in the present condition of society there, could not compete with the people of this country, even if they were a different race from what they were. The profits they made were made at the expense of the manufacturers of this country. It was a similar sort of protection to that which was extended some thirty years ago with respect to the cultivation of tobacco in Ireland. There was no prohibition to the cultivation of that plant, until the late Sir Henry Parnell brought in a bill for the purpose, and then the Irish landlords and the Irish clergy, in the shape of tithes, claimed a benefit to their own pockets at the expense of the people of this country. In like manner, the people of India were getting profits at the expense of the manufacturers of Manchester. With respect to Lord Canning, he hoped it would not be thought that he was capable of saying a word disrespectful to him. His lordship had a most difficult task to perform, and had performed it well. He had conducted himself with firmness and courage, and at the same time with humanity and consideration, but he could not help thinking that his Excellency might just as well have left alone the encouragement of the importation of bad cotton into this country.

The Secretary announced that on Wednesday evening next, the 24th inst, a Paper by Mr. John Bell, Sculptor, "On Color on Statues; Color round Statues; and Paintings and Sculpture arranged together," would be read. On this evening Sir Thomas Phillips, Chairman of the Council, will preside.

The Secretary has received the following letter since the meeting:—

"Sir,—Mr. Bourne, who has been very many years a stipendary magistrate in Jamaica, would have been here to listen to Mr. Crawfurd's interesting paper if his health had permitted. He requested me, in case he should find himself unable to come, to show to the meeting three samples of cotton; one, which is Sea-island, and was purchased at Manchester, on the 2nd inst., at 1s. 6d. per lb.; the other two were grown in Jamaica, and picked from trees in Manchioneal, where the Jamaica Cotton Growing Company are now replanting the seed. Whether the cotton is quite as long in the staple as the Sea-island, will be decided by better judges of cotton than Mr. Bourne. An American cotton grower has valued one of these samples at 1s. 6d. per lb., and the Cotton Supply Association at Manchester value it at 1s. 4½d. per lb., and pronounce it to be excellent in colour and quality, and very long in staple. It is admitted that inferior cotton, such as the ordinary American and the East Indian are more generally used, but the time has come when we must strive for excellence in every respect, and whilst we do not neglect the claims and capabilities of the East Indies, we must not lose sight of the fact that, by making the West Indies prosperous, we should strike an effectual blow at the system of slavery all over the world. Mr. Bourne, had he been here, would have asked Mr. Crawfurd for information on a subject of considerable importance to the cause of freedom and humanity. It is not long since that Mr. Bourne called on a noble lord, who said to him, 'I have just had with me a judge from the East Indies, who stated that slavery is still carried on in that country in contravention of the law.' It seems that law is evaded by indenting children for a term of 99 years. If Mr. Crawfurd can assure us that this is not the fact, it will give great satisfaction to those who had hoped that slavery no longer existed in any part of the British empire or its dependencies.

"I am, &c.

WILLIAM BRANSTON."

Home Correspondence.

PRODUCTS AND RESOURCES OF TASMANIA.

Sir,—I was unexpectedly prevented from attending the meeting on the 10th inst., or I should have given verbally the few observations upon Dr. Milligan's paper with which I now trouble you.

It may perhaps appear somewhat ungrateful to ask for further information after the rather lengthy paper referred to, but Dr. Milligan may possibly be able to add a few points to, and thereby increase the value of, his very instructive communication.

In the first place, we might reasonably hope for a few more particulars relating to the food-products of Tasmania, both as regards their local preparation and consumption, and also the articles which are now, or may be hereafter, exported for this country.

Tasmanian wheat I quite believe to be of superior quality, as a general rule, to that consumed in Britain, whether of home or Russian growth; in 1857, a small sample of the grain was placed in my hands, which gave on analysis the following results:—

Water	13·450
Ash	2·210
Potassa	·265
Soda	·390
Magnesia	·233
Lime.	·072
Sesquioxide of Iron	·024
Sulphuric Acid.	·154
Chlorine.	·053
Phosphoric Acid.	·945
Silicic Acid	·026
Nitrogenous matter, Gluten, Albumine, &c.	15·750
Nitrogen	2·500
Carbonous matter (and loss)	68·590
Fat or Oil	1·425
Starch, Sugar, &c.	67·165
	100·000

In the preceding figures the proportions of nitrogen, fat, phosphoric acid, and alkalies, will be readily noted, as being distinctly above the average; I have frequently heard of the superior qualities of the barley of Tasmania, but have never examined samples.

Perhaps Dr. Milligan could furnish us with some more detailed particulars respecting those food products of Tasmanian growth, which are, or may be found, specially adapted to meet the requirements of the mother-country, and also concerning those plants it would be practicable and advisable to cultivate there for a similar object. It would be interesting to learn what edible roots, if any, could be profitably grown in Tasmania for British consumption; even a non-edible plant yielding large quantities of starch of fair quality, would supply a great and very generally felt want; if I am not mistaken, some rather considerable prizes are (or have been) offered in this country and in Belgium, for the discovery of a means of obtaining starch, suitable for manufacturing and general purposes, from a source not furnishing food for man.

Although perhaps the cost, delay, and risk, attending transportation, might prohibit the regular importation of many of the food-products of the colony which are of little comparative value, or are consumed in very large quantities, this objection could not apply to those generally somewhat costly substances from which the flavours, the perfumes, and the colouring matters of commerce are extracted.

I believe experiments have been made with the view of cultivating the vanilla plant, but I am not aware of the result. Then, again, if I am not mistaken, the fragrant *Acacia Farnesia*, and the *Comesperma volubilis*, and several varieties of *Eurybia* are already grown to a small extent in Tasmania, while it has been stated to me that the same country is favourable for the growth of the *Garcinia Cochinchinensis*, the *Rubia tinctorium*, the *Panax quinquefolium* ("*Ginseng*") the *Statice tartarica* (perhaps the most powerful tanning agent known) and many other plants of equal or greater importance.

What is there either to prevent Tasmania from supplying us with very large quantities of silk, manna, millet-sugar, and various textile fibres? And, as a final query, perhaps I may ask if any credence should be attached to the rumour—for it seems to be of no very definite character—that truffles of a fine quality have been found in the northern part of the colony.

Anything that tends to commence or extend the practice of importing to this country the products of any of its colonies or foreign possessions, must be regarded as of no mean importance to the interests of the countries concerned. Three advantages attend the movement, viz., the supplying of home desiderata by British subjects; the more rapid development of the resources of the colony itself, and, lastly, the check that can be had upon the quality of the articles imported, in other words, upon the practice of adulteration, should it be found to exist.

I am, &c.,
WENTWORTH L. SCOTT.

Bayswater, London, W., April, 1861.

MEETINGS FOR THE ENSUING WEEK.

Mon. ...Brit. Architects, 8.
Geographical, 8½.
Medical, 8½. Dr. E. Symes Thompson, "On Progressive Muscular Atrophy."

Tues. ...Antiquaries, 2. Anniversary.
Royal Inst., 3. Professor Owen, "On Fishes."
Civil Engineers, 8. Mr. George P. Bidder, Jun., "On the National Defences."
Medical and Chirurg., 8½.
Zoological, 9.

Wed. ...London Inst., 12. Anniversary.
Roy. Soc. of Literature, 4. Anniversary.
Society of Arts, 8. Mr. John Bell, "On Color on Statues; Color round Statues; and Paintings and Sculpture arranged together."
Geological, 8. 1. Mr. Joseph Prestwich, "On the Occurrence of *Cyrena fluminalis* at Kelsey Hill, near Hull." 2. Mr. Marcus W. T. Scott, "On the Shropshire Coalfield, more particularly as relates to the Great East or Simon Fault."
Archæological Assoc., 8½.
United Service Inst., 8½. Capt. E. P. Halsted, "On Iron Clad Ships."

Thurs...Royal Inst., 3. Prof. Tyndall, "On Electricity."
Roy. Soc. Club, 6.
Numismatic, 7.
Philological, 8.
Royal, 8½.

Fri. .....United Service Inst., 3. Major Miller, "The Italian Campaign of 1859. Part II., General Review."
Royal Inst., 8. Prof. Owen, "On the Scope and Appliances of the National Museum of Natural History."

Sat. .....Royal Inst., 3. Max Muller, "On the Science of Language."
Royal Botanic, 3½.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Delivered on 8th March, 1861.

Par. Num.
75. Public Debt—Account.
79. Hay, &c., Contracts—Return.
53. Bills—Labourers' Cottages.
62. ,, Votes for Disqualified Candidates.

Session 1860.
383 (D). Poor Rates and Pauperism—Return D.

Delivered on 9th and 11th March, 1861.
73. Poor Law—Return.
82. Navy (Deserters)—Return.
83. Army—Return
76. Bankruptcy—Return.
90. Parliamentary Boroughs (Assessed Taxes, &c.)—Return.
63. Bills—Red Sea and India Telegraph (Amended).
64. ,, Masters and Operatives.
Consuls—Statement showing the Alterations in Salaries.

Delivered on 12th March, 1861.

69. Divorce and Matrimonial Causes—Returns.
80. Bankruptcy—Annual Return of Accountant.
84. Court of Chancery— Annual Return of Accountant General.
44. East India (Mysore Family)—Return.
29. Railway and Canal Bills (127. Birkenhead, Cowes, and Newport (Extension); 129. Great Southern and Western (Capital, &c.) (Extension); 130. Henley in Arden; 131. Llanelly Railway and Dock (Lease, &c.) (New Lines, &c.); 132. Marlborough, Merionethshire; 133. Scottish North Eastern; 134. West Hartlepool Harbour and Railway (Capital &c.) (Running Powers, &c.)—Board of Trade Reports.

Delivered on 13th March, 1861.

86. Red Sea and India Telegraph Bill—Minutes of Evidence.
92. Court of Chancery—Copy of Commission.
93. Customs Acts (1860)—Return.
94. Clare's Iron Vessel Patents—Return.
96. Bills of Exchange—Return.
29. Railway and Canal Bills (135. Caledonian and Symington, Biggar, and Broughton; 136. Charing-cross (City Terminus); 137. Dunblane, Doune, and Callandar; 138. Kilkenny Junction; 139. Metropolitan (Extension to Finsbury Circus) (Improvements, &c.); 140. Uxbridge and Rickmansworth; 141. West London Extension; 142. West of Fife Mineral Railway, and Charleston Railway and Harbour—Board of Trade Reports.
56. Bill—Borough of Dublin.

Delivered on 14th March, 1861.

85. Naples—Return.
87. East India (Property Tax)—Return.
60. Local Acts (24. West London Extension Railway; 25. South Shields Improvements and Quay; 26. Tyne Coal Drainage; 27. Caledonian Railway (Rutherglen and Coatbridge Branches); 28. Cornwall Railway; 29. Londonderry and Lough Swilly Railway; 30. Andover and Retbridge Railway Extension; 31. Tyne Improvement; 32. Charing Cross Railway (City Terminus); 33. Mid Eastern and Great Northern Junction Railway; 34. Hull West Dock; 35. Kingston-upon-Hull Docks (New Works—Admiralty Reports.
61. Bills—New Trials in Criminal Cases.
65. ,, Statute Law Revision.
Italy—Further Correspondence, Part 8.

Delivered on 15th March, 1861.

22 (1). Army Estimates (Manufacturing Department of the Army) —Statement.
71. New South Wales—Return.
81. Duchey of Lancaster—Account.
89. Felt and Scaleboard—Return.
97. Consuls (Alterations in Salaries)—Statement.
98. Hibernian Military School (Dublin)—Return.
102. Bullion—Return.
104. Maden *v.* Catanach, &c.—Return.

Delivered on 16th and 18th March, 1861.

77. East India (Local Armies)—Return.
101. Malt Duty—Return
99. Convicts—Return.
31. Cambridge University—Copies of Statutes.
59. East India (Military Finance Commission)—Return.
91. Royal Marines, &c.—Return.
100. Refreshment Houses, &c., Acts—Return.
107. Committee of Selection—Fourth Report.
60. Local Acts. 36. Hull and Doncaster Railway; 37. Swansea and Neath Railway; 38. Midland Railway (Additional Powers); 39. Cowes and Newport Railway Extension—Admiralty Reports.
55. Bills—Roads and Bridges (Scotland).
48. ,, Holyhead Road.
58. ,, Exchequer Bills.
67. ,, Volunteers Tolls Exemption.
71. ,, Greenwich Hospital Works.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, April 9th*, 1861.]

Dated 26th March, 1861.

755. H. Spencer and E. Taylor, Rochdale—Imp. in steam engines and boilers.
757. J. Smith, jun., Coven, and J. B. Higgs, Brewood, Staffordshire —An imp. or imps. in thrashing machines.
759. T. Davison, Belfast, and R. Paterson, Glasgow—Imp. in and connected with steam engines.
761. J. Savory, 143, New Bond street, and W. R. Barker—An improved "douche" for the ear and other parts of the human body.

[*From Gazette, April 12th*, 1861.]

Dated 7th December, 1860.

2998. C. J. Hill, Froliche-cottage, Turnham-green—Imp. in presses for stamping medals, embossing, and cutting or punching out metal or paper, and printing on paper, linen, or any other material.

Dated 14th February, 1861.

378. E. Rimmel, 96, Strand—A new process for impregnating the atmosphere with perfuming or purifying vapours.

Dated 5th March, 1861.

564. W. E. Newton, 66, Chancery-lane—Imp. in the process of cementation. (A com.)

Dated 7th March, 1861.

578. W. S. Kennedy, 16, Talbot-terrace, Bayswater—An improved method of and apparatus for imparting the motion of riding to wooden or metal horses, part of which is applicable to cradles and other similar appliances.

Dated 8th March, 1861.

588. E. Comte and E. Prevost, Chantilly, France—Imp. in the actual mode of scouring wools before and after the combing of the same.

Dated 11th March, 1861.

598. P. P. Mataran, 60, Rue Lalande, Bordeaux, France—Imp. in the construction of casement or French windows.

Dated 13th March, 1861.

616. B. Grundy, Ashton-under-Lyne, and S. Andrew, Knowls lane, near Lees, Lancashire—Imp. in apparatus for lubricating the piston rods, pistons, and cylinders of steam engines and other frictional surfaces of machinery.
620. G. F. Muntz, French Walls, near Birmingham—Imp. in sheathing iron ships or vessels.

Dated 14th March, 1861.

628. W. E. Gedge, 11, Wellington-street, Strand—An improved musical instruments, part of which are applicable to organs, harmoniums, and similar instruments. (A com.)

Dated 18th March, 1861.

674. A. Krupp, Essen, Prussia—Certain imp. in the method of securing tyres for rolling stock on their wheels.

Dated 19th March, 1861.

684. J. Jervell, Molde, Norway—Imp. in the preparation of fish and sea animals for manure, and in apparatus connected therewith.

Dated 20th March, 1861.

694. J. Watson, Jarrow, Durham, and T. B. Davison, Munster-square, Regent's-park—Imp. in the mode of applying and securing thowl pins or rowlocks to boats, barges, lighters, and all craft propelled by means of oars or sculls.

Dated 21st March, 1861.

708. J. Franks, 14, Little Tower-street—An improved mixture and preparation of teas.
712. C. Taylor, jun., Nottingham—An improved method of enabling the guard, or other person, to communicate with the engine driver, or vice versa in railway carriages, or railway trains, or similar conveyances, by means of electricity.

Dated 22nd March, 1861.

719. J. Victor, Wadebridge, and J. Polglase, Bodmin, Cornwall—Imp. in safety fuses for mining and other purposes.
722. R. A. Brooman, 166, Fleet-street—Improved means of colouring enamelled leather, leather cloth, enamelled metal, and other enamelled surfaces. (A com.)

Dated 23rd March, 1861.

732. W. H. Clarke, 3, Vernon-place, Bloomsbury-square—Imp. in commissariat ambulance cooking apparatus and appurtenances.

Dated 25th March, 1861.

742. J. T. Holden, Birmingham—An imp. in, or addition to, victorines, boars, collars, and other like articles of dress for females.
744. J. Grant, Mansfield, Nottinghamshire—Imp. in machinery or apparatus for twining or spinning and doubling cotton or other yarns and threads.
746. S. A. Beers, Brooklyn, U.S.—Imp. in rails for tram-roads, and in laying down the same in streets and highways.
752. T. Bentley, Margate—Imp. in making up, or packing, charges or small quantities of gunpowder, drugs, or other articles.
754. G. F. Morrell, Fleet-street—Imp. in the manufacture of sealing wax.

Dated 26th March, 1861.

756. S. Lamb, Manchester—Certain imp. in pipes for smoking tobacco.
760. H. Emes, St. John's-villas, Adelaide-road, Hampstead—Imp. in dress fastenings, which are also applicable to other fastening purposes.

Dated 27th March, 1861.

763. W. Spence, 50, Chancery-lane—Imp. in dressing or preparing the surface of mill stones. (A com.)
764. W. Grimshaw, Lytham, Lancashire—Imp. in machinery and apparatus used in drying, pulverizing, and compressing clay and other materials.
765. E. Briggs, Castleton Mills, near Rochdale, and S. Fearnley, Rochdale—Imp. in the manufacture of piled fabrics, and in the machinery or apparatus employed in manufacturing piled and other fabrics.
766. W. E. Gedge, 11, Wellington-street, Strand—Imp. in lamps. (A com.)
767. C. D. Abel, 20, Southampton-buildings, Chancery-lane—Imp. in the construction of wardrobes. (A com.)

768. J. M. Dunlop, Manchester—Imp. in machinery for cleansing cotton.
769. J. G. Willans, 2, Clarence-place, Belfast—Imp. in the preparation of hydrated oxide of iron, and the application of such prepared oxide for the absorption or separation of sulphur from certain gases.

Dated 28th March, 1861.

771. B. Brittain, Cowley-road, Brixton—Imp. in obtaining motive power.
772. J. Bremner, Leith—Imp. in steam boilers.
773. P. M. Parsons, Arthur-street West, London-bridge—Certain imp. in fire-arms, and in the method of rifling the barrels of the same.
775. L. J. Vandecasteele, Lille, France—Imp. in brewing.
776. J. Sanderson, Clerkenwell—Imp. in travelling bags or cases, and in fittings for the same, a part of which fittings is applicable to holding cigars and other like articles.
777. R. A. Brooman, 166, Fleet-street—Imp. in the manufacture of sheer steel. (A com.)
778. W. Sorrell, Haggerstone, Middlesex—Imp. in apparatuses for mashing malt.
779. W. Stratford, Mile-end, Old-town, Middlesex—Imp. in the construction of furnaces for heating steam boilers, bakers' ovens, and brewers' coppers, which imps. are applicable also to furnaces made use of for various other purposes.

Dated 30th March, 1861.

781. J. J. Field, Holloway-place, Holloway—Imp. in apparatus for evaporating in vacuo.
782. W. Simonds, Renfrew—Imp. in or connected with ships or vessels.
783. J. Griffiths, Richmond-park, Breck, Liverpool—Improved compositions or cements, and methods of applying the same to various parts of buildings and houses where slates, tiles, stones, and sheet metals have been used.
784. J. Rattray, Manchester—Imp. in window-frames, commonly called casements or French lights.
785. T. Sykes and C. Sykes, M.D., Cleckheaton, Yorkshire—Imp. in steam boilers, and the prevention of incrustation therein.
786. J. Cass, Bury—Imp. in steam engines and boilers, and in apparatus connected therewith.
787. G. Barton, Nottingham, and T. Soar, Radford, Nottinghamshire—Imp. in washing, wringing, and mangling machines, applicable also for dying or bleaching purposes, to be called "The Nottingham washing machine."
788. W. D. Napier, 22, George-street, Hanover-square—Imp. in the manufacture of rubbers for the human teeth and gums.
789. J. J. L. Guiblet and J. Rambal, 11, Wilmington-square, Clerkenwell—Imp. in keyless and other watches and timekeepers.
790. D. Sutton, Banbury—Imp. in apparatus for hanging gates.
791. C. A. Ehrenberg, Altona, Denmark—Imp. in the construction of ships' compasses.
792. H. Medlock, Great Marlborough-street, Westminster—Improved means for preserving fermented liquors.
793. T. Simpson, Darfield Fire Clay Works, Yorkshire—Imp. in apparatus for the manufacture of bricks.
794. O. Earle, Liverpool—An improved lubricating compound.
795. R. Itidley, Low Wortley, and J. Rothery, West Ardsley, Yorkshire—Imp. in hewing or working coal and other minerals, and in the apparatus employed therein.
796. J. Briggs, 42, Bridge-street, Blackfriars—Imp. in the manufacture of an artificial substance to be used as a coating or covering for stone, bricks, wood, or metal, and also in the method of, and means for, manufacturing flags, bricks, blocks, or paving, from the said substance.

Dated 1st April, 1861.

797. G. Russo, Genoa—A new method of colouring as a substitute for saffron in the manufacture of cheese, pastes, and other articles in which saffron is employed.
799. J. Lowe, Glasgow—Imp. in the mode of applying colouring matter to certain textile fabrics and yarns in the process of dying and printing.
801. S. de Sanges, 23, Northumberland-street, Strand—Imp. in mattresses, cushions, and such like articles.
803. R. James, Faversham—Imp. in reaping and mowing machines.
804. R. A. Brooman, 166, Fleet-street—An improved method of fixing lac and lac varnishes upon glass and ceramic ware. (A com.)
805. J. Gardner, Eversholt-street, Middlesex—Imp. in portable buildings or structures.
806. W. Palmer, Ballymena, Antrim—Imp. in machinery or apparatus for grinding wheat and other grain.
807. W. Brookes, 73, Chancery-lane—Imp. in means or apparatus for obtaining superheated or surcharged steam, and for increasing the draft through the flues of locomotive and other boilers. (A com.)

Dated 2nd April, 1861.

809. J. G. Winton and T. W. Cowan, 42, Bridge-street, Blackfriars—Imp. in the means for actuating machine hammers, which said improvements are also applicable to pile-driving, and other such-like machines and purposes.
810. J. H. Winder, Sheffield—Imp. in means or apparatus for raising and forcing water and other fluids.
811. E. Horlick, Tredegar, Monmouthshire—An improved stand for exhibiting drapery or other goods for sale.
815. J. Brown, Glasgow—Imp. in preparing fabrics to render them suitable for packing goods, and in closing or sealing packages.
816. J. Sickels, 67, Gracechurch-street—Imp. in machinery or apparatus for stitching, uniting, and ornamenting leather and other similar materials. (A com.)
817. W. Clark, 53, Chancery-lane—Imp. in stamping presses. (A com.)

Dated 3rd April, 1861.

818. T. E. Wilson, Cornholme, near Todmorden, Lancashire—Imp. in machinery for agricultural purposes.
820. M. H. Blanchard, 74, Blackfriars-road—Imp. in the manufacture, construction, and ornamentation of articles made of terra-cotta, stoneware, and plastic clays, adapted for the construction of fire-proof stairs, steps, landings, slabs, tiles for roofing and paving, chimney shafts, columns for buildings, posts, or standards, pedestals, and statues, and in the method of moulding the same.
822. W. E. Newton, 65, Chancery-lane—Imp. in machinery for cutting and harvesting grain, grass, and other substances. (A com.)
824. A. C. Bamlett, Middleton Tyas, Yorkshire—Imp. in reaping and mowing machines.

[*From Gazette, April 9th*, 1861.]

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

703. L. L. Tower, Massachusetts, U.S.—Relating to heads for lead pencils, ink erasers, and other articles of like character. (A com.)—20th March, 1861.
716. W. M. Cranston, 58, King William-street—Imp. in sewing machines. (A com.)—22nd March, 1861.
734. W. T. Henley, 46, St. John-street-road, Clerkenwell—Imp. in electric telegraphs and in apparatus connected therewith. —23rd March, 1861.

PATENTS SEALED.

[*From Gazette, 12th April*, 1861.]

April 12th.

2490. J. Blackwood and W. Blackwood.
2491. M. Strang.
2493. G. Wearing.
2496. R. A. Brooman.
2501. J. Higgins and T. S. Whitworth.
2504. J. T. Webster.
2510. A. McDougall.
2512. C. Burn.
2513. C. Burn.
2514. P. R. Smith.
2515. J. Bent and J. Luckock.
2517. C. J. Burnett.
2525. W. Henderson & J. Down.
2532. H. A. F. Duckham.
2536. W. Eades and G. Worstenholm.
2537. A. White.
2538. T. J. Marshall.
2541. E. Habel, J. Holzwasser, and E. Burns.
2561. W. Jamieson, W. Robinson, and C. Rowbottom.
2566. E. W. Hughes.
2568. J. Smith and J. Holt.
2572. A. Dietz.
2573. A. Dietz.
2575. W. E. Gedge.
2576. G. W. Hart.
2610. W. Sharpe.
2622. H. Lawson.
2650. I. Dreyfus.
2664. G. Davies.
2690. W. E. Newton.
2753. F. Preston and T. Kennedy.
2780. A. V. Newton.
2890. S. M. Fox.
3072. W. D. Allen.
3184. J. S. Russell.
74. W. H. Muntz.
80. W. H. Moran.
84. A. M. Foote.
130. W. Spence.
328. G. Jarrett.
399. J. H. Johnson.

[*From Gazette, April 16th*, 1861.]

April 16th.

2539. A. B. Jacout.
2547. J. Macintosh.
2554. J. Marsden.
2555. C. Hoare.
2617. W. Palmer.
2649. M. Henry.
2665. G. Davies.
2811. C. Stevens.
2861. W. H. Ralston.
41. W. Taylor.
69. B. B. Hawse.
75. W. H. Muntz.
145. B. Piffard.
229. T. A. Verkruzen and M. A. Verkruzen.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[*From Gazette, April 12th*, 1861.]

April 8th.

775. P. Brun.
787. S. Bickerton.
806. J. Gorham.
857. E. K. Calver.
969. W. Clark.

April 9th.

767. H. Bayley and J. Greaves.

781. D. McCrae.
783. A. Manbré.
784. J. Rae.
789. T. Kay.
944. E. Tomlinson.

April 10th.

809. C. Mather & H. Charlton.

[*From Gazette, April 16th*, 1861.]

April 11th.

797. P. Schafer and F. Schafer.
803. W. C. Holmes and W. Hollinshead.

April 12th.

786. J. Bailey, E. Oldfield, and S. Oddy.
810. E. Green.
815. F. Preston and W. McGregor
817. L. Cowell.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

[*From Gazette, April 16th*, 1861.]

861. S. Colt.